American Journal of Public Health
and THE NATION'S HEALTH

Volume 28 November, 1938 Number 11

Opportunities and Responsibilities of the Health Officer in Connection with the Federal Housing Acts*

C.-E. A. WINSLOW, Dr.P.H., F.A.P.H.A.

Professor of Public Health, Yale School of Medicine, New Haven, Conn.; Chairman, Committee on the Hygiene of Housing of the American Public Health Association

THE American Public Health Association began its career with a clear recognition of the importance of housing as a public health problem. The very first volume of *Reports and Papers* of the Association for 1873 contains a report by Carl Pfeiffer, F.A.I.A. on "Sanitary Relations to Health Principles of Architecture." The second volume of *Reports and Papers* for 1874–1875 blossomed out with no less than 5 papers on housing problems, 2 by Dr. Ezra M. Hunt of New Jersey and one each by Dr. E. H. James of New York, Dr. Henry W. Dean of Rochester, and F. H. Hambleton, C.E., of Baltimore. Dr. Dean put his finger on the crux of the problem when he said: "I have not at present any special interest in the construction of dwellings for the affluent. Given the sanitary principles in the substructure, the superstructure in its general appointments is commonly well provided for sunlight, and in the form and capacity of its living rooms. In the tenements and houses provided for the middle and laboring classes, the classes constituting three-fourths or more of our population, and the source of a still larger proportion of native born children, the State should see to it that such homes are made healthy, and preserved in such conditions as to conduce to the maintenance of health."

The third volume of *Reports and Papers* for 1875–1876 again contains 4 papers on housing problems, by Dr. Hunt, once more, and by such distinguished leaders of the Association as Dr. Stephen Smith, Col. George E. Waring, Jr., and Prof. E. N. Horsford. Dr. Smith showed that the proportion of the total mortality of New York City contributed by its tenement population was decreasing. He attributed this to

* Presented on behalf of the Committee on the Hygiene of Housing before the Health Officers Section of the American Public Health Association at the Sixty-seventh Annual Meeting in Kansas City, Mo., October 25, 1938.

sanitary inspection of tenements and urged the extension of such service to other dwellings; and Professor Horsford calls for "a new profession, akin to that of engineering, or to that of engineering and medicine united." The expert he visualizes should be "the 'house physician,' 'the sanitarian'—the efficient and consulted brother of the 'family physician.'"

The specters of carbonic acid, crowd poison, sewer gas and ground air stalk across these yellowed pages; yet in many of the papers, notably those of Dr. Ezra Hunt, there is much that remains sound and significant after sixty-five years.

Later on, the early interest of our Association in physiological and hygienic problems, in broad environmental and social influences, faded in the brilliant light of the germ theory of disease. For half a century the struggle between microbe and host dominated the scene and only during the last few years have the potent factors of diathesis on the one hand and of social environment on the other come back into the picture.

Today, we again recognize that while it is difficult or impossible to obtain a quantitative evaluation of the exact relation between housing conditions and mortality rates there are numerous aspects of housing which, indubitably and in important degree, do influence human health in its physical, emotional and social aspects.[1] We may perhaps say, with Stephen Smith in 1876, "The great want of American communities today is sanitary architecture in our dwellings and sanitary supervision in their management."

As a result of developments during the past 5 years, this "great want" is at last in the way of being met; and it is these developments which make the problem of such urgent moment to the health officer.

The United States has been singularly backward, as compared with the nations of Western Europe, in its solution of this problem. It has been estimated that nearly 6 million new dwellings would have been needed in 1937 to meet the quantitative housing shortage and to replace qualitatively the most unsuitable slum areas, and that provision for increasing population and replacement of obsolescent dwellings will call for over 10 million more dwellings by 1950. To catch up with minimum needs by that date will, therefore, call for more than a million new dwelling units a year.

In the years between 1932 and 1937, the federal government for the first time attacked the situation, chiefly—so far as actual construction was concerned—through the Housing Division of the Public Works Administration and the Resettlement Administration. The PWA, which was the agency dealing with urban housing, built 51 projects in 35 cities of 20 states, 2 territories, and the District of Columbia.

The government housing program was put on a permanent basis by the passage of the Wagner-Steagall Act of 1937. This act created the United States Housing Authority as a "body corporate of perpetual duration," "to provide financial assistance to the states and political subdivisions thereof for the elimination of unsafe and insanitary housing conditions, for the eradication of slums, for the provision of decent, safe and sanitary dwellings for families of low income, and for the reduction of unemployment and the stimulation of business activity." To carry out this program, Congress has authorized the Authority to lend 800 million dollars during its first 3 years. The Act requires the elimination by demolition, condemnation and effective closing, or the compulsory repair or improvement of an unsafe or insanitary dwelling unit in the locality for every new dwelling unit in a housing project. The elimina-

tion of slum dwellings may be deferred, in the discretion of the Administrator, where an acute housing shortage exists. All slum clearance and low-rent housing programs must be initiated by the localities themselves (not by the federal government as in the earlier PWA projects); and local initiative is taken by a duly constituted "public housing agency." This agency may be a municipality, county, or state (duly authorized under proper enabling state legislation), but will normally be a local housing authority which is a public corporation, without taxing power, created or authorized by state law for the purpose. Thirty-three states have now passed enabling acts creating "public housing agencies."

In addition to the provisions of the Wagner-Steagall Act and quite independent of it, is the program provided for in the National Housing Act of 1938 to stimulate private building operations for families on a higher economic level. Under this act the federal government will act as a mortgage guarantor for projects which conform to certain specified conditions, including minimum health standards. This program will be administered by the Federal Housing Administration which is a government agency entirely distinct from the United States Housing Authority.

It is the U. S. Housing Authority under the directorship of Nathan Straus which will be concerned with low-cost housing; and it is the program of this agency which is of most vital concern to the health officer.

In many European countries, the guidance of the national housing program lies in the hands of public health authorities. In England, for example, the comprehensive plans, finally crystallized in the Housing Acts of 1935 and 1936, are administered entirely by the Ministry of Health. The last report of the Ministry outlines the 3 objectives of that Act as follows: (1) the clearance or other appropriate treatment, within a prescribed period, of unfit houses and the effective housing of those displaced; (2) the abatement of excessive overcrowding and the rehousing of the overcrowded families; (3) the assurance of an adequate regular production of good and cheap houses to meet ordinary working-class demands outside the slum and overcrowding sphere. The first of these objectives has been essentially attained and the second is now in process of realization, following a comprehensive survey of overcrowding completed 2 years ago. The Minister of Health reports that between 1918 and March, 1936, 1,259,387 houses have been completed under the successive Housing Acts with government contributions of 164,489,622 pounds.

In the development of the early stages of our American housing program—although no such primary health department responsibility has yet been recognized—both voluntary and official health agencies have played a substantial part. In Cincinnati, Cleveland, Philadelphia, Pittsburgh, and Washington, individuals or groups of public health workers have been active in promoting a study of housing needs and in stimulating remedial measures.

In Chicago, as in other cities, the Board of Health has control over heating, lighting, ventilation, plumbing, and drainage within buildings, and controls dwelling conditions from the time that plans for new and remodeled structures are submitted for approval, through the period of construction and during occupancy. Furthermore, in the report of Dr. Bundesen's Bureau of Sanitary Engineering—as far back as 1923–1925—we find constructive discussion of the general housing shortage and its cure as well as analysis of specific structural defects. In 1934 Dr. Bundesen was made Chairman of the Mayor's

Committee on Sub-Standard Housing, on which the Fire Department, and the Departments of Buildings, Loans and Public Works, as well as Public Health, were represented. During the next year and a half this committee brought about the demolition of several thousand sub-standard dwellings which were deemed a menace to public health and safety.

In Hartford, in 1934, the Mayor's Housing Commission was set up at the request of the Health Department. In Birmingham, the County health officer in the same year instigated an Advisory Council which made numerous surveys and was directly responsible for the creation of a local housing authority and the construction of a negro project.

In Memphis, the Health Department has been an outstanding leader in this field. Dr. L. M. Graves and A. H. Fletcher have presented 2 valuable papers before the Health Officers Section of the A.P.H.A.[2] reviewing the progress which has been made. These health administrators believe that "good housing is an essential foundation on which to build a well rounded health program." They add that, "in the larger cities where so much needs to be done, the health department may not actually be concerned with the administration of a housing program, although it will certainly be called on to investigate complaints in regard to poor housing conditions and will be in a position to make its influence felt in trying to work out a solution. In many cities the health department may be the logical agency to take the prime interest in, and to define to a large extent the housing problem and undertake its solution." Dr. Graves and Mr. Fletcher compiled a comprehensive housing study in 1934 and a second more intensive survey of slum areas in 1937; and, as a result, are in position to replace haphazard response to complaints in regard to insanitary conditions by a constructive and basic health program.

In 1937, an intensive survey was made of all tenement buildings and dwelling houses in one ward of the city of Newark, by the Health Department of that city under the direction of Dr. C. V. Craster; this survey is thought to have aided materially in securing for the city an earmarking of 12½ million dollars for low-cost housing.

These instances of leadership by American health officers in the housing field by no means exhaust the record. They simply illustrate the fact that the day is past when housing was merely a problem for private speculative enterprise and when the health officer could limit his work to the negative task of eliminating the more obvious insanitary conditions, with little thought for the positive challenge of planning a program of adequate housing for the future.

During the past 5 years, when the initiative for new housing projects has come from Washington, the opportunity for active participation by the health officer could easily be ignored. Now, however, the whole picture has changed. Housing under the Wagner-Steagall Act is a local municipal enterprise. Destruction of slums and creation of good new housing are linked in a new type of municipal housekeeping enterprise, fundamentally dominated by health needs in their broad connotation.

This concept of civic housekeeping, and the housing movement which is a basic part of it, spring from a new philosophy which is emerging with respect to our cities of today and to the possibilities of urban living in the future. Workers in health and social reform are not alone in recognizing that slums and blighted areas present a menace to the stability of our whole urban structure.

The unplanned growth of cities; the flight of many people from deteriorating

urban areas to suburban regions where they seek to reëstablish a decent environment; the resulting decline in central population densities, land values and tax revenues, and the diminishing usefulness of schools, parks, utilities and other public investments in such areas of shrinking population—these have aroused the serious concern of thoughtful mayors, assessing officials, city planners, and civic leaders of all sorts. There is an increasingly general acceptance of the proposition that great sections of our cities must, physically and literally, be rebuilt in order that those cities may enjoy a stable economy and a durable type of growth.

Progressive thinkers in city planning are turning away from their earlier preoccupation with the design of monumental civic centers, arterial streets and landscaped parkways, and from zoning practices suited to a boom psychology. From these superficial trappings of city growth they are turning to the central problem of human living, to the task of furnishing well planned and well located communities of dwellings. Thus only, can we provide a material matrix for a type of urban life which shall approximate the ideals of physical, mental, and social health. Thus only, can planning be developed on a basis which visualizes a relatively stable use of urban land and a reasonably permanent allocation of schools, parks, and other public services. City planners, in other words, are coming to recognize good housing as the only solid basis for urban development.

Under the guidance provided by this viewpoint, and with the immediate stimulus afforded by the new public housing legislation, great sections of our cities are going to be rebuilt, and within our own generation. In cities such as Cleveland, where over 9 million dollars has been spent and nearly 9 million more is earmarked, an impressive start has already been made. New York City has built about 25 million dollars worth of U. S. projects and has 53 million dollars earmarked.

Although the immediate incentives of this new city planning and housing activity are many, the concept of health is central to all of its objectives. Those administrators and technicians who have responsible places in the housing program are increasingly anxious that the public health viewpoint shall be actively represented in the execution of that program. From intimate knowledge of the reception which has been accorded by housing groups to the first work of our Association's Committee on the Hygiene of Housing, I can say to you without qualification that the people who count in the housing field are waiting eagerly for the contribution which the public health profession can make. The cordial reception extended to our committee, on a national scale, by the National Association of Housing Officials, the American Federation of Housing Authorities, the American Institute of Architects, will be duplicated by local housing and planning officials as rapidly as local health officers and their departments demonstrate that they are ready and able to coöperate.

Just what is it that the health officer can contribute?

There are 5 stages of the housing program at which the influence of the health officer—with his basic knowledge both of local physical conditions and of local racial and social needs—should be of prime importance.

First of all, there is the problem of the housing which now exists, and the opportunity of improving and stabilizing it by the vigorous exercise of powers clearly vested in the health department. For it will be idle to build new housing if existing dwellings which can be improved are not improved, and if areas which could be saved from blight are allowed to deteriorate faster

than new housing can be built. On this level, housing enforcement programs such as those of the Chicago and Memphis departments warrant the closest study.

Activities of this sort are suggested in the *Appraisal Form* * of the Association, which now includes the following questions with respect to health department activities:

a. Are data maintained by any city department concerning the total supply of dwelling accommodations including new construction, demolition, and vacancy?

Does any city department maintain a file of "sub-standard" (structurally unsafe) dwellings?

b. Are all plans for new dwellings or alterations on existing dwellings examined, and is approval mandatory, by the health department or some other city department, before building operations are commenced, in order to insure adequate space, light, ventilation, and sanitary equipment?

If approval of plans is by a department other than the health department, was the health department concerned in the establishment of standards for space, light, ventilation, sanitary equipment?

c. Does the health department have legal powers to demolish or control the occupancy of such "sub-standard" dwellings?

d. Does the department have power to inspect existing dwellings with regard to space, light, ventilation, and sanitary equipment?

Closely related to such improvement of existing sub-standard but improvable dwellings is the second problem—that of the slum elimination which must parallel or follow the development of any new housing project under federal grants. It is conceivable that such sanitary enforcement programs as have been outlined under my first category above would result in the elimination, by improvement, of sub-standard dwellings equal in number to those constructed by the local authority, and that credit for these eliminations could be granted. But it is the intent of the Act, and it will generally be the fact, that the worst slums must be cleared by demolition. And the U. S. Housing Authority has ruled that this must be done not later than 2 years after a local housing shortage has been relieved by new construction.

Where the local authority elects to build new projects on slum sites, and where clearance of these sites provides the necessary slum elimination, the authority's powers of eminent domain will generally enable it to proceed without legal assistance from other city departments. But where the authority builds on vacant land, and must then select equivalent slum areas for later demolition, it will often be found that its rights of eminent domain do not apply, and the authority must depend on other city departments—health, building, police—for justification of the clearance. Even in the former case there should be agreement between the health department and the authority that the slums to be cleared are, in fact, those most suitable for clearance.

Who better than the health officer has the knowledge and the equipment to determine which are the "unsafe and insanitary" dwelling units to be eliminated? His inspectorate is the one existing agency which has or should have, the information necessary for determining the facts. It is the health officer who already possesses broad powers under the general laws governing control of nuisances, to be enforced by fines, by summary abatement, or by condemnation. In most urban communities, these powers are supplemented by specific statutory regulations governing building construction and occupancy. Finally, in certain jurisdictions it has been provided that a tenement may not be occupied until it has received a certificate from the board of health, bringing in the very convenient principle of licensing power. The knowledge now at the command of a

* *Appraisal Form for Local Health Work* (1st ed.), 1938, p. 156.

well organized health department should furnish the basis for housing demolition surveys and greatly simplify their execution.

A concern with the improvement of existing housing and with the condemnation and demolition of areas which are beyond improvement is obviously only the beginning of that interest which the health officer should display in this fundamental field of public health. It is of equal importance that he should play his part in the planning of the new public housing projects which are to replace the slums. It is to him that we should look for counsel in regard to those factors in the design of new dwelling units which influence health and which are determined by basic physiological and psychological needs, by the necessity for protection against contagion and accident. He and his staff know more about the racial groups of the city, their living habits, their psychological reactions, than any other municipal officers. Their counsel should be invaluable in locating new projects and in planning their design and arrangement. The availability of local clinics and other health facilities may often be a factor of fundamental importance. Some of the projects already constructed (as in New York City) include space for health department activities in their buildings; and this is a tendency which could be followed with advantage in the future.

Nor does the health officer's responsibility for these new housing projects cease when construction is completed. There are now about 50 such projects already in operation in our municipalities. They are, in general, adequately planned; but realization of the objectives of healthful housing depends on wise selection of tenants and on continuing supervision of occupancy. Under the new decentralized federal housing program, tenants must be chosen within specified income levels; but even with such limitations there is real danger that the recommendations of local politicians may carry undue weight. In such contingencies, the presence of the health officer on the authority or on a board of review for tenant selection and regulation of occupancy should prove of inestimable value. We must remember that the health officer alone has the machinery to enforce regulations in regard to occupancy and sanitary maintenance on a continuing city-wide basis.

Finally, we should not permit our vision to be limited by the immediate problems of slum clearance and the provision of low-rent housing under the U. S. Housing Administration. These are parts of a more comprehensive plan for the best attainable housing facilities serving the entire community. An important factor in this problem is the Federal Housing Administration which as a mortgage guarantor is in position to stimulate the construction of the right type of housing on a commercial basis for persons in a middle income range. The health officer, if properly qualified, might play an important rôle in integrating public and private housing enterprises, and in coordinating the activities of architects, builders, and financiers with the real health needs of the people to be served. His professional training and his position of impartial objectiveness might be made a strong factor in holding both public and private housing to their underlying objectives, and encouraging private enterprise to play its part in the total program.

All this is a tremendous challenge to us as public health workers. The first step for the health officer who is ready to meet that challenge is, obviously, to become fully familiar with the state and local legislation in this field and with the administrative machinery which has been set up to make it operative. A second step should be to analyze the

data now in health department files and to determine what further surveys are necessary to make the actual local housing situation clear. WPA forces are being permitted to furnish assistance in this field which should prove invaluable; and recent reports prepared under the direction of R. H. Britten as a part of the National Health Survey of the U. S. Public Health Service will give the local health officers of cities included in that survey first-hand data as to housing conditions which will be of the most fundamental importance.

In developing such affiliations, the health officer will find a knowledge of the wider national movement of substantial advantage. This can be furthered materially by contact with the National Association of Housing Officials.* The publications of this association, particularly its pamphlets on *Demolition of Substandard Housing*, and *Planning for Low-Rent Housing*, will be found of interest to every health officer. The U. S. Public Health Service is in position to aid you in your tasks through the appointment of Dr. J. M. DallaValle as its officer specifically assigned to study the housing problem.

In particular, however, I am here today to offer you the assistance of your own A.P.H.A. Committee on the Hygiene of Housing. One of the chief purposes in establishing this committee was to aid the health officer in meeting this new demand upon his time and energy. We have prepared—primarily for your use—a report on the Basic Principles of Healthful Housing.[3] This report has already been distributed by the National Association of Housing Officials, at the suggestion of Housing Administrator Straus, to local authorities as a guide in the planning of their projects. Together with a companion report of N.A.H.O., it has been tentatively approved by the two chief housing agencies of the federal government for official publication. This committee of the A.P.H.A. has therefore already made some contribution to the cause on your collective behalf. We trust that it may help you individually to orient your services to the cause in your respective areas; and, within limits of time and money, the membership and staff of the committee are at your disposal for contact with existing literature in this field and for counsel as to particular local problems. We believe that full and active participation in the local housing program will enable you as health officers to render a contribution toward the promotion of public health which is logically yours and which will open up one of the most vital and most promising areas of public health service for the coming years.

In its medical aspects the public health program began as a repressive police activity concerned almost wholly with isolation and quarantine. Today it has taken on a positive constructive aspect, and in its clinics, its nursing, and its educational work it is primarily concerned with direct service to the individual citizen. In the field of sanitation (except for the provision of public water supplies and sewerage systems) the emphasis is still largely on police control. The housing program offers to the sanitarian a unique opportunity to pass over into the service field and to gain the support which comes from appreciation of contributions rendered directly to the people whom he serves.

* 1313 East 60th St., Chicago, Ill.

REFERENCES

1. Britten, R. H. *Pub. Health Rep.*, 49:1301 (Nov. 2), 1934; and Winslow, C.-E. A. *A.J.P.H.*, 27:56 (Jan.), 1937.

2. Graves, L. M., and Fletcher, Alfred H. Housing Problems in a Southern City. *A.J.P.H.*, 25, 1:31 (Jan.), 1935.

Graves, L. M., and Fletcher, Alfred H. Developing a Housing Program in a Southern City. *Ibid.*, 27, 7:645 (July), 1937.

3. *A.J.P.H.*, 28, 3:351–372 (Mar.), 1938.

Administrative Control of Food Handlers and Places Dispensing Food and Drinks

KATHERINE MARDEN, F.A.P.H.A., JOSEPH M. CURRY, D.V.S., LOUIS J. HOROWITZ, AND BENJAMIN G. HORNING, M.D., F.A.P.H.A.

Director, Bureau of Laboratories; Director, Bureau of Food and Sanitation; Chief Food and Milk Inspector; and Health Officer, Board of Health, Hartford, Conn.

THE administrative control of food handlers and places dispensing food and drinks is one of the most difficult problems in the field of public health. The subject has been receiving much attention from public health officials during the past few years, and considerable data concerning the problem have appeared in the literature. The purpose of this article is to review the subject briefly and to describe recent activities of the Hartford Board of Health in this field.

Food handlers play a rôle of some importance in maintaining the health of the community. This group includes housewives and servants in private homes, as well as food handlers in public and semi-public places. The housewife may not be the cause of an extensive outbreak of disease, but she may cause illness among her own family and guests by failure to observe proper precautions in storing, preparing, and serving food. It is the responsibility of health officials to instruct food handlers concerning the danger of food-borne diseases and their prevention. It is also important that consumers know what is expected of food handlers in the way of personal hygiene and other preventive measures.

The germs of many communicable diseases may be present in the human nose, mouth, throat, genitourinary and gastrointestinal tracts, and leave the body with excretions from these parts. In this way diseases may be spread by case or carrier, either directly or indirectly. If the illness is spread by one with symptoms, it is usually easy to find the source of infection. If spread by carrier, it is more difficult. It is well known that the following diseases, as well as others, may be spread by contaminated food:

Amebiasis	Poliomyelitis
Diphtheria	Scarlet fever
Dysentery, bacillary	Streptococcus sore throat
Food poisoning	Tuberculosis
Paratyphoid fever	Typhoid fever

These and many other diseases, including those listed below, may also be spread indirectly by contamination of dishes and other utensils, or directly from food handlers to customers:

Chickenpox	Pneumonia, broncho
Conjunctivitis, infectious	Pneumonia, lobar
Encephalitis, epidemic	Smallpox
Influenza	Syphilis (rarely)
Measles	Common cold
Meningococcus meningitis	Vincent's angina
Mumps	Whooping cough

Personal cleanliness is one of the

fundamental principles of food handling. Proper washing of the hands after using the toilet, after contamination from coughing or sneezing, and before beginning to prepare or serve food is of the utmost importance. The hands may become contaminated with discharges from the nose, mouth, throat, genitourinary and gastrointestinal tracts, and may be a menace to the public. If the hands are to be washed thoroughly, hot running water, soap, nail brush, and ample time are necessary. They should be dried on individual towels. The finger nails should be neatly trimmed and free from dirt at all times.

It has been shown that the routine examination of food handlers by supervisory authorities has had but little effect upon the incidence of disease. Compulsory laws, involving a large expenditure of money and frequently giving a false sense of security, would not seem to be justified. A number of cities which formerly issued health certificates to food handlers have discontinued doing so. From the standpoint of public health administration, experience indicates that the spread of such diseases as typhoid fever, syphilis, and tuberculosis can be controlled more satisfactorily and economically by investigating all cases and contacts in the community and bringing the sources of infection under control, than by routine examination of food handlers. However, a periodic health examination by a physician is highly desirable for the individual, and the Hartford Board of Health advises that it be done on a voluntary basis.

Many foods at room temperature serve as excellent media for the growth of certain disease producing germs. Great care must be taken in the preparation, storage, and dispensing of such foods. Before serving they should be heated to such a degree as will kill pathogenic bacteria. Food that is not intended for immediate consumption should be placed under refrigeration. Many cases of illness result each year from the improper preparation and storage of cream filled pastry, meats, and other foods.

All foods should be given individual service. Serving forks, tongs, spoons, and other implements should be used to handle such foods as cake, candy, bread, and lump sugar. Persons preparing salads, sandwiches, and foods to be eaten unheated, should take the maximum precautions to prevent touching the ingredients with their hands.

Glasses, dishes, silverware, and other utensils in which food is prepared, stored, or served should be cleansed, disinfected and properly protected from contamination until used again. This protects the next person from germs which may have been left by the food handler, or by the customer who previously used the utensil.

LABORATORY STUDIES AND LEGISLATION

A laboratory study of drinking glasses from places dispensing food and drinks in Hartford was begun in the autumn of 1934 and continued through the summer of 1935.[1] The purpose of the project was to determine the efficiency of disinfection of glasses, dishes, and other eating utensils. One glass was examined from each of 200 drug stores, 232 taverns, and 198 restaurants—or a total of 630. The tavern glasses were examined during the winter and spring, and those from the restaurants and soda fountains during the autumn of 1934 and summer of 1935.

At the time the study was begun a review of the literature[2] revealed no accepted standard laboratory methods for such work, hence the results may not be comparable with similar studies elsewhere. It was necessary to develop a technic which would be relatively simple, and yet would give a representative bacteriological picture of conditions. At first only total plate counts were made

from supposedly clean glasses. As the study progressed, it was decided to determine the type of organism on the glass rim, and the bacteriological content of the entire glass.

The cultures were made in the establishments by a representative of the Board of Health. A definite amount of sterile water and a swab were provided for each glass. The water was placed in the glass and worked around in such a way as to wash down the bacteria, and then returned to the original bottle. The swab was rubbed around the rim of a second glass, approximately 1 inch from the top inside and outside, and returned to its tube. They were then brought to the laboratory and cultures were made within 1 hour. Agar plates were made from the glass washings and incubated for 36 hours. The swab was placed in a tube of sterile bouillon and allowed to incubate over night. It was found that this period of incubation was the most satisfactory for preventing over-growth by spore formers. In the morning the swab was removed from the tube, direct smears were made, and it was then discarded. The smears were stained by the Gram method. Blood agar and Endo plates were made from the broth tubes. After 24 hours' incubation these plates were examined macroscopically for hemolytic or coliform colonies.

A second bacteriological survey of glasses was begun in the autumn of 1935 and continued through the summer of 1936. In this study the rim of one glass from each of 690 establishments was cultured. By this time a routine laboratory technic had been developed. The laboratory technician taking the cultures was provided with 10 c.c. of sterile water in a test tube and a sterile dry swab wrapped in paper. Just before taking the culture, the swab was moistened in the water and rubbed on the rim of the glass, inside and out. The swab was returned to the tube of sterile water and brought to the laboratory. Before making the culture, the swab was shaken vigorously in the sterile water. This was continued until the cotton was nearly loosened from the swab. A measured portion of the water was used for a plate count, and a broth culture was made from the swab. A smear was made from the broth culture, stained by the Gram method, and examined for type of organism. Colonies on the agar plates were counted and the count was adjusted after figuring the dilution. A summary and comparison of the bacteriological findings of the two surveys will be found in Tables I, II, and III.

The results of the laboratory studies indicated that many places in Hartford were not adequately disinfecting eating utensils. A large percentage of glasses examined were found to be contaminated with bacteria commonly found in the human upper respiratory and gastrointestinal tracts. It was shown that rinse water of 130°F., as required by Board of Health regulation, would not properly disinfect eating utensils.

A careful survey of disinfecting agents and methods was made. It was con-

TABLE I

Plate Counts from 630 Drinking Glasses, 1934–1935

Colonies	*Restaurants*	*Drug Stores*	*Taverns*	*Total*
0– 100	47	24	17	88
100– 1,000	41	42	24	107
1,000–100,000	86	103	146	335
Over 100,000	24	31	45	100
Total	198	200	232	630

TABLE II

Bacteria Cultures from 630 Glass Rims, 1934–1935

	Restaurants Positive		*Drug Stores Positive*		*Taverns Positive*	
Organism	*Number*	*Per cent*	*Number*	*Per cent*	*Number*	*Per cent*
Streptococci	12	6.1	8	4.0	77 *	33.2
Staphylococci	40	20.2	56	28.0	73 †	31.5
Pneumococci	3	1.5	0	0.0	23	9.9
Coliform	15	7.6	57	28.5	87	37.5

* Hemolytic streptococcus 3
† Hemolytic staphylococcus aureus 6

TABLE III

Bacteria Cultures from Glass Rims

	630 Examinations 1934–1935 Positive		*630 Examinations 1935–1936 Positive*	
Organism	*Number*	*Per cent*	*Number*	*Per cent*
Streptococci	97	15.4	99	14.3
Staphylococci	169	26.8	148	21.4
Coliform	159	25.2	127	18.4

cluded that from the administrative point disinfection by hot water would be the simplest to supervise. The efficiency of certain chemical agents in disinfection was granted, but their supervision would not be practical in Hartford. Bacteriological studies were made to determine the minimum temperature and time needed for adequate disinfection. The new regulation was adopted on August 19, 1936, and became effective October 1, 1936.

Regulations Concerning the Cleansing of Glasses, Dishes, Silverware, and Other Utensils Used at Places Dispensing Food and Drink

a. All glasses, dishes, silverware, and other utensils used at places dispensing food or drink shall be washed after each service until clean to the sight and touch in warm water (110°–120° F.), containing soap or alkali cleanser.

b. After cleansing, all glasses, dishes, silverware, and other utensils, shall be placed in wire cages and subjected by immersion for at least 5 minutes to the bactericidal action of water heated to a minimum of 170° F.

c. Upon removal from the hot water, glasses, dishes, silverware, and other utensils shall be stored in such a manner as not to become contaminated before being used.

d. Other equally effective methods of bactericidal action by heat, hot water, or steam will be approved.

e. When paper receptacles, ice cream cones, or other single service utensils are used for serving food or drink, they must be kept in a sanitary manner, protected from dust, flies, and other contamination.

A new regulation concerning the serving of food and drinks was also passed and an Inspection and Score Card System adopted.

Regulation Concerning the Serving of Food and Drink

a. Places manufacturing, preparing, and serving food and drink shall require all food handlers to wash their hands thoroughly with soap and water after using the toilet.

b. Places serving food and drink shall take the maximum precautions to prevent contamination of food and drink by hands of waiters and customers.

c. All food and drink shall be given individual service.

d. Places dispensing food and drink shall display the license and score card in such place as is plainly visible to the public, and is approved by the Board of Health.

TABLE IV

Bacteriological Examination of Glasses

Organism	*1934–1935 614 Examinations Per cent Positive*	*1935–1936 690 Examinations Per cent Positive*	*1937–1938 2,794 Examinations Per cent Positive*
Streptococci	15.3	14.3	0.3
Staphylococci	26.0	21.4	9.73
Coliform	25.3	18.4	4.76
No growth or spore formers	33.4	45.0	85.01

After sufficient time had been allowed for installation of equipment, and for instruction of proprietors and food handlers as to the necessity of adequate disinfection of utensils and observance of personal hygiene, a third survey was made. This included a plate count from the rim of glasses and a culture for the type of organism from all places dispensing food and drinks in the city. No attempt was made to classify streptococci or staphylococci as to hemolysis, and the Gram-negative bacilli were all classified as coliform organisms. The results are compared in Table IV with the studies made previous to the enforcement of the new regulations.

TABLE V

Bacteriological Examination of Glasses

Colonies	*1934–1935 542 Examinations Per cent Positive*	*1937–1938 934 Examinations Per cent Positive*
0	10.32	30.94
1– 100	5.53	21.73
100– 500	9.42	8.99
500– 1,000	8.51	5.36
1,000– 5,000	22.14	9.85
5,000–10,000	9.77	4.07
10,000–50,000	20.29	4.39
Over 50,000	14.02	14.67
Total	100.00	100.00

DISINFECTING EQUIPMENT

Less than 10 per cent of places dispensing food and drinks in Hartford had equipment and plumbing which fulfilled the requirements of the new regulations. Two difficulties presented themselves. Manufacturers did not make the type of equipment suitable for the smaller places, and the plumbing in many establishments, even with new equipment, was not capable of maintaining water at the desired temperature. Representatives of equipment companies, sanitary engineers, and plumbers conferred with representatives of the Board of Health. Apparatus was designed, and laboratory studies were made to determine whether it would disinfect eating utensils.

The Board of Health licenses 623 places to dispense food and drinks in Hartford. All have installed approved disinfecting equipment. The types of apparatus may be divided into 5 groups: (a) tanks with dish trays; (b) sinks with dish trays; (c) hot air disinfectors; (d) mechanical dish washers; (e) paper utensils. Most of the smaller places have installed the simple tank type. Many fountains have sinks with trays. The heat for the first two types is generated by gas, and the temperature regulated either by thermostat or thermometer. The hot air disinfector was designed by a local company. Laboratory tests have shown that utensils are disinfected by this type of apparatus when exposed to 250° F. for 15 minutes. The larger establishments have mechanical dish washing. Table VI summarizes certain data concerning disinfecting equipment in use in Hartford.

TABLE VI

Data Pertaining to Disinfection

Type Equipment	*Number Places*	*Disinfecting Space Average Cubic Inches*		*Heated by*	
		Per Place	*Per Customer*	*Gas* *	*Electricity*
Tank with Trays	308	4,400	22.5	299	9
Sink with Trays	169	4,762	25.2	156	13
Hot Air	47	4,852	19.3	16	31
Mechanical	62	5,070	8.7	59	3
Paper Utensils	37	0	0	0	0
Totals and averages	623	4,771	18.9	530	56

* Includes 15 disinfectors heated with coal and 5 heated with oil.

INSPECTION AND EDUCATION

The Inspection and Score Card is a valuable aid to the Board of Health Educational Program. It was patterned from Figure 64 of *Recording of Local Health Work*, by Walker and Randolph.[3] Their form was simplified and adapted to our local needs. It is required to be posted where it will be visible, and may be inspected by customers. A leather holder is provided by the Board of Health, and a duplicate Score Card is filed in the Board of Health office. The establishment is scored monthly. This does not mean that it is inspected only once each month as frequently it may be necessary to make several visits. Four points are allowed for each item. When practical, the place is scored by a different inspector each month.

The representative of the Board of Health makes the inspection in the presence of the manager and other employees. It is an educational visit. Each item is inspected carefully and criticisms and suggestions are made. If violations are found, a note is made on the back of the Score Card and a reasonable length of time is given for necessary corrections. The Score Card is proving a stimulus to establishments to improve the standard of their service. It gives the Board of Health an opportunity to educate food handlers in the best methods of food handling and personal hygiene. The Score Card is also very helpful to the inspector. It provides him with a standard inspection procedure and a monthly record of each establishment for comparison.

DISCUSSION

It is impossible to estimate the amount of disease spread by food handlers and eating utensils. Lynch and Cumming[4] made extensive studies of dish washing in several army stations. These investigators found that the influenza rate was much higher among men using dishes washed in the line, than among those who ate at the tables and whose dishes were washed in water of higher temperature. "In an epidemiological study of 66,076 troops it was shown that there was an influenza rate of 51.1 per 1,000 troops among those who had the advantage of collective washing of utensils, while among those who washed their own mess gear in warm water, the rate was 252 per 1,000."[5] They concluded[4] that if mess kit dish water is responsible for explosive outbreaks in the army, perhaps, common dish water in public eating places likewise is responsible for the spread of certain diseases.

Cumming[6] sent questionnaires to public institutions in the United States. The 370 institutions replying formed

MONTHLY SCORE SHEET FOR PLACES DISPENSING FOOD AND DRINK IN HARTFORD

(PROPERTY OF THE HARTFORD BOARD OF HEALTH)

Firm Name ..... Address .....
Owner or Proprietor ..... Nature of Business .....

Date		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Buildings	Arrangement	...	...	...	...	...	...	...	...	...	...	...	...
	Floor	...	...	...	...	...	...	...	...	...	...	...	...
	Walls and ceilings	...	...	...	...	...	...	...	...	...	...	...	...
	Light and ventilation	...	...	...	...	...	...	...	...	...	...	...	...
	Screening	...	...	...	...	...	...	...	...	...	...	...	...
	Toilets	...	...	...	...	...	...	...	...	...	...	...	...
	Handwashing facilities	...	...	...	...	...	...	...	...	...	...	...	...
Utensils	Kitchen	...	...	...	...	...	...	...	...	...	...	...	...
	Dishes	...	...	...	...	...	...	...	...	...	...	...	...
	Silverware	...	...	...	...	...	...	...	...	...	...	...	...
	Mechanical equipment	...	...	...	...	...	...	...	...	...	...	...	...
	Dishwashing equipment *	...	...	...	...	...	...	...	...	...	...	...	...
	Sink and drainboard	...	...	...	...	...	...	...	...	...	...	...	...
	Tables and counters	...	...	...	...	...	...	...	...	...	...	...	...
Refrigeration	Ice box	...	...	...	...	...	...	...	...	...	...	...	...
	Water cooler	...	...	...	...	...	...	...	...	...	...	...	...
Food storage	Meat	...	...	...	...	...	...	...	...	...	...	...	...
	Milk	...	...	...	...	...	...	...	...	...	...	...	...
	Other supplies	...	...	...	...	...	...	...	...	...	...	...	...
Food service		...	...	...	...	...	...	...	...	...	...	...	...
Waste and garbage receptacles		...	...	...	...	...	...	...	...	...	...	...	...
Flies and vermin		...	...	...	...	...	...	...	...	...	...	...	...
Employees	Health certificates	...	...	...	...	...	...	...	...	...	...	...	...
	Washable outer garments	...	...	...	...	...	...	...	...	...	...	...	...
	General cleanliness	...	...	...	...	...	...	...	...	...	...	...	...
Total score		...	...	...	...	...	...	...	...	...	...	...	...
Employees	Male, number	...	...	...	...	...	...	...	...	...	...	...	...
	Female, number	...	...	...	...	...	...	...	...	...	...	...	...
Inspector's initials		...	...	...	...	...	...	...	...	...	...	...	...

* To maintain temperature of water at minimum of 170° F. Score based on rating of 4 points per item.

the basis for the report. These came from every state in the Union and from many different types of institutions. As a result he concluded that the major avenue of infection was through interchange of contaminated eating utensils. He found that the pneumonia mortality rate was higher in institutions than in the army or civil life, due perhaps to larger messing groups and lack of sanitary dish washing.

Cumming and Yongue [7] stated that there were sound reasons for believing the sanitation of eating and drinking utensils is an important factor in disease control. They found that only 60 per cent of the contamination was removed by the washing process, but when the hand or machine method was consistently carried out, there was 99 per cent reduction in bacteria.

In 1924 the city of Dayton, Ohio, began a study [8] designed "to give greater protection to the eating out public." The investigators through a program of inspection, instruction, and laboratory examination have worked out a system of ratings which are published monthly in the bulletin of the Health Department.

That this method has been effective is shown by the fact that in 1925 only 28 per cent of the restaurants received the Class A or excellent rating, whereas 92.5 per cent received the Class A rating in 1933.

Laboratory studies (Tables I, II, and III) have shown that a high percentage of drinking glasses used in places dispensing food and drinks in Hartford were contaminated with bacteria from the upper respiratory and gastrointestinal tracts. The same condition was undoubtedly true of other eating utensils. A study made after the installation of disinfecting apparatus (Table IV) demonstrated a marked improvement in the bacteriological findings. The percentage of glasses adequately disinfected increased from 33.4 per cent and 45.9 per cent in the first two studies to 85 per cent in the last survey. This was too great a difference to be due to chance, and it seems fair to conclude that it was due to the program which included new legislation, the installation of disinfecting equipment, and mass education.

The Board of Health program to improve the sanitary condition of places dispensing food and drinks in Hartford has been received with enthusiasm by the public. The proprietors and employees of establishments have been coöperative. The policy has been one of education rather than police force. Food handlers are being instructed in the correct principles of personal hygiene and the best methods of preparation, storing, and dispensing of foods. The public is being taught to demand modern and approved methods of food sanitation. This is being accomplished through the press, radio, lectures, literature, demonstrations, and personal contact by trained personnel. The problem is a difficult one, and only a beginning has been made. Years of conscientious effort will be required to accomplish the maximum results.

CONCLUSIONS

1. Laboratory examinations have shown that a large percentage of drinking glasses used at places dispensing food and drinks in Hartford were not adequately disinfected. They were frequently found to be contaminated with bacteria from the human upper respiratory and gastrointestinal tracts.

2. Only a small percentage of places dispensing food and drinks in the city had equipment and plumbing capable of disinfecting eating utensils as required by the new Board of Health regulations.

3. Laboratory examination of glasses following the installation of apparatus capable of disinfecting eating utensils showed a marked improvement in dish washing sanitation.

4. The Inspection and Score Card adopted by the Board of Health has proved to be a valuable administrative aid as well as a stimulus to the proprietors of eating establishments to raise the standard of their service.

5. Legislation, and disinfection of equipment are of little value unless followed by an educational program for the instruction of both food handlers and the public in the correct principles of food handling.

REFERENCES

1. Botsford, C. P., M.D., Health Officer Emeritus, Hartford, Conn. Unpublished Data, 1934–1935.

2. The Public Health Committee of the Cup and Container Institute, 30 Rockefeller Plaza, New York, N. Y. *Techniques for the Bacteriological Examination of Glasses.*

3. Walker and Randolph, *Recording of Local Health Work*, pp. 216, Figure 64.

4. Lynch, Charles, M.D., and Cumming, James G., M.D., Dr.P.H. The Distribution of Influenza by Indirect Contact—Hands and Eating Utensils. *A.J.P.H.*, 9, 1:25–38, 1919.

5. Cumming, James G., M.D., Dr.P.H., and Yongue, N. E. Eating Utensil Sanitation. *A.J.P.H.*, 26, 3:237–244 (Mar.), 1936.

6. Cumming, James G., M.D., Dr.P.H. Influenza-Pneumonia as Influenced by Dish Washing in Three Hundred and Seventy Institutions. *A.J.P.H.*, 9, 11:849 (Nov.), 1919; 10, 7:556 (July), 1920.

7. Cumming, James G., M.D., Dr.P.H., and Yongue, N. E. A Standard Technique for the Bacteriological Examination of Eating Utensils. *Mil. Surgeon*, 80, 6:411–417 (June), 1937.

8. Our Method of Protecting Health Through Cleanliness Rating of Eating and Drinking Utensils. *Bull.* Div. of Health, Dayton, Ohio, Mar. 1, 1936.

9. *Memorandum on the Cleansing and Bactericidal Treatment of Glasses, Dishes, etc.*, U. S. Public Health Service—Office of Milk Investigations.

Projection of Public Health Engineering in New York State*

W. H. LARKIN, C.E.

Supervising District Engineer, State Department of Health, Middletown, N. Y.

THE New York State Public Health Law, which is the legal basis for all public health work in the state, provides for the State Department of Health under direction of a commissioner, local boards of health for all political subdivisions, including cities, villages, towns and special consolidated districts, and medical health officers to serve each local health district. The Public Health Law has been amended from time to time but the general setup for health work has not changed since 1893.

The Public Health Council was established by the laws of 1913, with legislative authority to enact rules and regulations known as the State Sanitary Code. Naturally, the Sanitary Code is more flexible than the Public Health Law and is often added to or amended. Thus the local health officers are charged with enforcement of the Sanitary Code, and specific duties, including matters pertaining to evironmental control of sanitation, have been materially increased in recent years by such amendments.

DEVELOPMENT OF THE DIVISION

The New York State Department of Health is relatively old. The Division of Sanitation was created in 1906, therefore its engineering work may be classed with that of a few other states as being among the pioneer public health engineering projects of the country. On July 1, 1921, the "Division of Sanitary Engineering," with 13 engineers, was abolished and the "Division of Sanitation" created. The reorganized division had only 5 men, a director, and 4 assistant sanitarians.

The reduction of the engineering force in 1921 resulted, as I understand it, from an effort to consolidate all engineering work of the various state departments in the office of the state engineer. This might seem like a logical move to the average layman, but the value and practical necessity of the engineer in a well organized public health department is demonstrated by the growth of the Division of Sanitation in the New York State Department since 1921 to one of the most important divisions in the department. The division now includes 41 engineers and 30 milk sanitarians. The milk sanitarians are technically trained men with degrees other than engineering. Many of the present positions are made possible by funds of the Social Security Act.

While there have been some new and different activities undertaken in recent

* Read before the Public Health Engineering Section of the American Public Health Association at the Sixty-seventh Annual Meeting in Kansas City, Mo., October 26, 1938.

years, the older reports indicate active work along the major branches of the environmental program as carried on today. The most notable development in New York State has been in the increase of personnel which has provided for a more effective control over these fundamental environmental factors.

The work in the sanitary control of milk was given additional emphasis, beginning in 1928, with the revision of Chapter III of the State Sanitary Code, requiring the approval by the state department of all pasteurizing plants. Then, in 1930, the Bureau of Milk Sanitation was created within the Division of Sanitation, this being the first bureau formed. The creation of the Bureaus of Camp Sanitation, Water Supply, and Sewage and Waste Disposal followed in 1935, 1936, and 1937. Each has provided for the concentration of effort and responsibility of the assigned personnel on these respective activities which had become a practical necessity.

ESTABLISHMENT OF DISTRICTS

With the entire personnel of the Division of Sanitation located in Albany and travelling out over the state from that point, it was difficult to exercise detailed supervision of water supply or sewage treatment plants at distant points. In addition, it was necessary for the engineer going into a community to have a thorough knowledge of the system and its history before the best assistance could be given. With different engineers going into the community, it took a great deal of additional work each time to acquire this knowledge of local conditions. The long distances, besides being costly, resulted in a rather high percentage of time spent in travel and a relatively lower percentage in productive field work. These considerations led to the assignment of an engineer to the first district in December, 1930, and, following the successful results of the work in the pioneer or experimental districts, engineers have been assigned to cover the entire state from district offices.

The state had been divided into districts since 1914 but the personnel of the districts did not include engineers, and the activities of the districts were decidedly limited. The number of these districts has recently been increased to 19 and a more complete decentralization put into operation. Each district covers two or three counties, is under the supervision of a district state health officer, and is equipped with professional and clerical personnel of all classes necessary for the operation of an independent unit. One or more engineers are stationed in each district, and 3 senior district engineers visit the other districts in a supervisory capacity. The principle of operation of the engineering work is that the policies are established and certain supervisory and consulting services furnished by the central office, but all routine and detail work is done by the district personnel.

WATER SUPPLIES

The sanitary supervision of public water supplies was the major activity in the early days of the Division of Sanitation and today is still one of the main functions of the district engineer. The Public Health Law places the responsibility for supervision of public water supplies directly upon the State Commissioner of Health and authorizes him to order necessary improvements. The supervision is of course exercised through the engineers. Because of these provisions, the State Department has always dealt directly with the local water supply officials, with the local health officer having only a minor rôle in connection with the public water supply. Supervision by the district engineers includes periodic inspections of systems and treatment plants, review and acknowledgment of reports upon

the operation of treatments, and the promotion of desirable improvements in equipment or operations. Recently routine laboratory examinations of samples from all public systems by the Division of Laboratories and Research of the State Department have been made. The district engineers are responsible for maintaining this program and transmitting the laboratory findings.

The intimate acquaintance with the various systems within the district and with the operating personnel enables the district engineer to maintain a closer and more effective supervision over them. Many improvements in public water supplies can be credited directly to the closer relationship and concentrated effort of the district engineer. We have experienced severe floods, damaging water supply plants, in which emergencies the district engineers have proved their value and the advantage of decentralized location and operation.

SEWAGE DISPOSAL

The Public Health Law in general prohibits the discharge of sewage into the waters of the state without a permit from the State Commissioner of Health. The State Department has enforced these requirements in cases of municipalities, industrial plants, institutions and public places, and plans for satisfactory treatment plants upon which the permits may be based, are required to be submitted. These plans are checked in detail by the Bureau of Sewage and Waste Disposal and all necessary field investigations are made by the district personnel. It is now possible, through the district personnel, to get all necessary field information before passing upon the plans. The department engineers coöperate with the consulting engineers in determining the degree or type of treatment necessary or desirable and in some cases a preliminary checking of the plans is done in the district office. The district engineers are also proving their value in promoting new sewerage systems and treatment plants and often are primarily responsible for the formation of new sewer districts.

Largely as the result of federal aid, a great number of sewage treatment plants have been constructed in the past few years. The supervision over the operation of these, including the review and acknowledgment of operation reports, is through the district offices. There is no doubt that, with the closer connection of the district engineers, this supervision is better than before and the operation of the plants as a whole more effective.

MILK CONTROL

The local health officers are made responsible by the State Sanitary Code for the milk control program, since they alone can issue permits for the sale of milk, cream, and certain milk products, and are required by the code to see to the enforcement of all regulations governing production and processing. Approval of the State Department of pasteurizing plants and "Special A Raw" dairies and bottling plants must be secured by the health officer before issuing permits for pasteurized or "Special A Raw" milk or cream. The standards for "Special A Raw" milk are in many respects equal to certified milk. By a special law enacted in 1937, all milk and cream produced outside New York State for sale within the state must be under inspection of the New York State Department of Health. About one-half the personnel of the Bureau of Milk Sanitation is engaged in this out-of-state work.

The general supervision of milk sanitation as carried on by the State Department has been turned over to district engineers and district milk sanitarians. A considerable portion of the non-engineering technical personnel of

the milk bureau is doing laboratory or research and consulting work.

A much closer supervision has been maintained over pasteurizing plants since the decentralization of the work and a great deal of help and advice is given the local health officers concerning their duties. While some local health officers have been doing a fine job of milk control work, the majority of the part-time health officers are inadequately trained and insufficiently interested to do a good job. A great deal of effort is sometimes necessary to have the health officer secure the required information on the physical condition of the cows, condition of the dairies, bacterial quality of the milk, etc., before he issues or renews permits. In some cases we know definitely that complete information is not secured. A few health officers insist on having all inspections made by their own personnel and do not accept the reports of other health officers, which they are allowed to do by code provisions. If all the inspection work of the local health departments could be properly allocated, there might be a pretty good coverage, but as it now is, this inspection work is spread too thin in some places, while in others there is none. The majority of part-time local health officers dislike routine milk work and their definite obligation in connection with it, and welcome all the assistance they can get from the State Department personnel.

The State Department program includes the routine phosphatase testing of all pasteurized milk and cream. The samples are collected by or under the supervision of the district men and the work done by the laboratories of the milk bureau. Recent results of these tests have generally demonstrated effective pasteurization. In cases where the phosphatase tests indicate ineffective pasteurization, an immediate check is made of the pasteurizing plant and of the general operation. Usually the reason for the unsatisfactory result is discovered and immediately corrected. In case the difficulty cannot be found in the plant and corrected, and particularly if it seems probable there has been a deliberate short holding or mixing of milk, the sale of milk from this plant is immediately discontinued. Often arrangements are made for the temporary pasteurization of such milk in another plant. The operation of the questionable plant is resumed only when assurance is given that conditions will be satisfactory.

Supervision over the production and processing of milk is one of the major activities of the engineering program today and has proved its value in the increased percentage of pasteurized milk consumed and the elimination of outbreaks of illness traceable to allegedly pasteurized milk.

SUMMER RESORTS

The proper control over summer camps, hotels, etc., is a peculiarly difficult job for health officials. Usually their season lasts for only 8 to 10 weeks and the management is loath to spend the necessary money for proper facilities. Besides this, they cannot conveniently carry on major construction work during the operating season and yet they find it inconvenient to do it at other times.

In New York State we have approximately 3,000 camps listed and have a general knowledge of thousands of hotels, boarding and rooming houses. In one county, which is a popular resort for New Yorkers, it is estimated there are 2,400 places, with a capacity for caring for 500,000 people at one time.

Chapter VII of the Sanitary Code requires a permit from the local health officer and sets forth satisfactory rules and regulations for the operation of camps. An intensive campaign for the

improvement of camps has been carried on through the district offices since the formation of the Camp Bureau and much progress has been made. Considerable pressure has been put on the local health officers to get the camps under permit; assistance has been given the health officer in making surveys of large numbers of camps and reporting upon their condition. In some cases legal advice and encouragement have been given in the conduct of proper hearings for revocation of permits and the closing of camps where serious health hazards existed.

We have no satisfactory regulations governing the operation of resort hotels, rooming or boarding houses, and this class of place presents a real problem. Many of the operators are of such character that appeal to their pride is entirely ineffective and the only possible means of securing necessary improvements, such as safe water supplies and satisfactory sewage disposal systems, is by bringing legal pressure. Correction of unsatisfactory conditions has been secured in many instances as the result of the district engineer's recommending that the local board of health take the necessary action and then closely supervising the procedure, which is usually that prescribed by the State Sanitary Code by which local boards of health may order the abatement of public health nuisances. The use of untreated surface water supplies and the discharge of sewage or sewage effluents onto the surface of the ground in accessible locations are, of course, routinely declared to be public health nuisances.

SWIMMING POOLS AND BATHING BEACHES

The Sanitary Code provides for the operation of swimming pools and bathing beaches under permit of the local health officer and sets forth standards of operation. In addition, all plans for new artificial pools or improvements to them must be approved by the State Department and operation records maintained and submitted to the local health officer and the district office of the state. The indoor pools or those operating over a reasonable period of time each year are under very good supervision.

In the summer resort county referred to above, it is estimated there are 500 swimming pools, all of which are out-of-doors and used only during the short summer season. Our records indicate that a rather large percentage of such bathing places are operated without permit and so without supervision, even by the local health officer. In some parts of the state there is consequently a big field for missionary work by the district engineer, but additional personnel is necessary before satisfactory conditions can be developed.

ASSISTANCE TO LOCAL HEALTH OFFICIALS

The advice and assistance of the district engineer is frequently enlisted and, in most communities where local engineering service is not available, he is considered as a regular consultant to the local boards of health. This assistance is particularly sought in the preparation of new local regulations and the conduct of legal proceedings, such as hearings by the health officer for the revocation of permits or by the boards of health for abatement of nuisances. The district engineers also are of great assistance to the part-time local health officials in dealing with matters which, because of their local color, are embarrassing for them to handle.

While the local health officers have a great tendency to shift to the district engineers as much of their non-medical work as possible, they are encouraged to do better work and in some cases to undertake new activities. A decided

improvement in the control of environmental factors by local health officials has resulted from the close coöperation of the district engineers.

MISCELLANEOUS ACTIVITIES

Besides the activities mentioned, there are a great many others, the number of which is ever increasing, carried on by the engineering personnel of the department. These include investigations of nuisance complaints, stream pollution studies, supervision of real estate developments (including checking of plans of water supply and sewage disposal services), investigation of watering points of interstate carriers, reviewing monthly reports of the local health officers covering their supervision of "Special A Raw" dairies, sanitary investigation of premises in connection with F.H.A. loans, operation of new provisions of the Sanitary Code specifying qualifications for water and sewage plant operators, coöperation with New York City in inspection of questionable water supplies of milk plants serving that city, addressing clubs and other gatherings on public health engineering subjects, and assisting in the conduct of extension courses for health officers.

Many of these important activities of course could not have been attempted without increased personnel, and the strategic locations of the engineers has helped materially in the successful accomplishment of these undertakings.

The public health engineering work in New York State has progressed steadily, at least since 1921, and it is believed the establishment of the decentralized system has been the greatest factor in this progress and in providing increased service to the people of the state. The district engineers are as so many hands of the Director of the Division of Sanitation, with the fingers stretched into every community. The population at large is becoming more conscious of environmental public health work and is asking for more and more from the Division of Sanitation.

The Sanitary Code has placed additional responsibility on the local health officers, in many cases incompatible with the remuneration received. Many of these duties are of a non-medical nature, particularly those in connection with the control of milk and of the operation of camps and swimming pools. A majority of the part-time health officers feel these obligations too much of a burden and would like to be rid of them.

A logical extension or projection of public health engineering work in New York State, in the opinion of the writer, would be to relieve the part-time local health officers of some of their non-medical functions. With engineers working in small districts, this could be accomplished by providing additional personnel and by amending the Sanitary Code to provide for this control directly by the State Department and for permits to be issued by the Commissioner through his district representatives.

A Time-Study of Morbidity and Mortality in the United States Navy*

JOHN M. WHEELIS, JR., M.D.

Lieutenant, Medical Corps, U. S. Navy, Washington, D. C.
In charge, Vital Statistics, Bureau of Medicine and Surgery, Navy Department

THIS paper is a preliminary report of research being done with morbidity and mortality records of the United States Navy. It deals principally with technic and basic data. The work is still in progress and only a partial report of results can be given at this time.

Unusual opportunities for research are offered by our data. The procedures for reporting sickness from the field are well defined and long established. The reports cover about 130,000 persons and come from all ships and stations of the Navy. When doing research in Washington, one may rightly consider that he has as field workers the 800 medical officers and a portion of the 3,700 hospital corpsmen of the Navy.

Regulations require that anyone not fit for duty at the time of morning sick call be placed on the sick list. Any disability of more than 24 hours' duration therefore becomes a matter of record and is reported directly to the Section of Vital Statistics in the Bureau of Medicine and Surgery. These reports, though brief, contain all necessary data for complete identification of the individual and of his disability, including the number of sick days. These are known as Individual Statistical Report(s) of Patient(s). After having been edited and placed individually on tabulating cards, they become the most important single item in the medical statistics of the Navy. Although they are intended primarily for routine use, they are on file for past years and are available for research. They were used in the present study.

The purpose of this study is to determine what happens to persons as they enter the Navy and grow older in it. This defines *Length of Service* as the basic variable. To provide a more homogeneous group and greater statistical continuity, only the enlisted personnel of the Navy were studied. Naval officers, officers and men of the Marine Corps, nurses, midshipmen, and prisoners were excluded. The period of the study is the calendar years 1935 and 1936. About 175,000 person-years are represented.

Description of the population in terms of the basic variable involved considerable detail and some interesting methods.

In the Statistical Section of the Bureau of Navigation there is main-

---

* Read before the Vital Statistics Section of the American Public Health Association at the Sixty-seventh Annual Meeting in Kansas City, Mo., October 27, 1938.

Submitted concurrently to the *U. S. Naval Med. Bull.* for publication.

NOTE: The statements herein presented emanate from the author, not from the Navy Department.

tained a living file of naval personnel. It consists of a tabulating card for each man. At the end of each year these cards are checked individually with the annual census from the field. Annually the numbers of personnel, by 4 year length-of-service groups, are reported. For the purposes of this study, the 4 year group was considered satisfactory for those with 4 years' service and over. It was considered necessary, however, to split up the under 4 year group much more finely. This was done by a life table method as will be described.

A man enlisting in January, 1931, would just complete 4 years' service in January, 1935, the first month of this study. In order to describe the under 4 year group completely for the years 1935 and 1936, it was necessary to follow, during their first 4 years' service, all men enlisting from January, 1931, to December, 1936, inclusive. The number enlisting each month during this time was obtained. Since these were derived from daily reports as received in the mails, they were adjusted for an average, 5 day, postal lag. Each of these groups was then followed separately by identifying, in the dead files, the cards of those who failed to survive their first 4 years' service, that is, the cards of those who left the service within their first 4 years. This produced 72 different survivorship records, beginning with successive months of enlistment, and ending with completion of 4 years' service or with the end of the study. After aligning them in stairstep fashion so that contemporary groups were side by side, it was easy to combine in any monthly grouping desired, during any calendar month of the study. The counts so obtained were adjusted arithmetically to the 15th of each month.

Monthly population figures for each of the groups with over 4 years' service were computed arithmetically from the counts as reported annually. Then, for each of the 24 months of the study, figures were recorded for 13 length-of-service groups, as follows: less than 1 month; 1 month; 2 months; 3–5 months; 6–11 months; 1 year; 2 years; 3 years; 4–7 years; 8–11 years; 12–15 years; 16–19 years; and 20 years and over. Then, by re-combining these groups, totals were obtained for comparison with known monthly totals supplied by the Bureau of Navigation. The latter had also to be adjusted for a 5 day postal lag and from the last to the 15th day of each month. The range of error in the 24 totals was from 0.03 to 0.67 per cent and the average error was 0.20 per cent. These errors were adjusted.

A man may be taken up on the sick list in the Navy in any one of 5 different ways. A (new admission); ACD (a first admission for a condition which complicates, or follows as a sequel of, a contributory disability); EPTE (a first admission for a disability which existed prior to entry into the service); RA (a readmission for a disability previously taken up by any one of the 3 preceding methods); or, REM (remaining from the previous year). The sum of the first 3, A, ACD, and EPTE, represents the total number of first admissions. All 5 must be considered to determine the number of sick days.

Among other things, length of service and date of admission are shown on each sickness card. Through mechanical sorting and tabulation the data were arranged for recording on basic tables, one for each disability, or group of disabilities, considered. The numbers of first admissions were recorded in each length-of-service group during each of the 24 months.

The numbers of sick days were also distributed along the length-of-service and time variables. The technic for this was rather complicated but the results should be interesting since the

numbers of sick days represent the actual time lost due to sickness and are, along with mortality rates, the final measure of the effect of sickness in terms of loss of man power.

This work is being done in phases. The first is the communicable diseases, the second the acute respiratory diseases. One would expect close relation of the first to environment. Information is greatly needed about the second.

This report deals with the communicable diseases. They are loosely defined here as the single attack, droplet-transmitted, acute, specific infections. There were 2,899 such cases distributed as shown in Table I.

TABLE I

Distribution of Cases

German measles	1,132
Mumps	985
Lobar pneumonia	217
Measles	182
Scarlet fever	160
Chicken pox	103
Cerebrospinal fever	77
Septic sore throat	15
Diphtheria	15
Whooping cough	7
Lethargic encephalitis	3
Ac. ant. poliomyelitis	3
Total	2,899

As men come into the service they arrive from all parts of the country. Some are from cities and have had frequent and diverse contacts with other people. Some are from rural areas where their contact rate was low. During the period of this study about 1,200 new men entered the service each month.

These new men are placed in one of 4 training stations for their first 3 months' service. They undergo a common experience and are together in groups nearly all of the time. Although their new environment is well controlled and healthful, they are, nevertheless, epidemiologically crowded. Most of them are more crowded than they had been in civilian life. Probably very few are any less crowded. Upon completion of 3 months' training most of them leave for other ships and stations. Some remain for further training. In addition to these new men there are a certain number of older

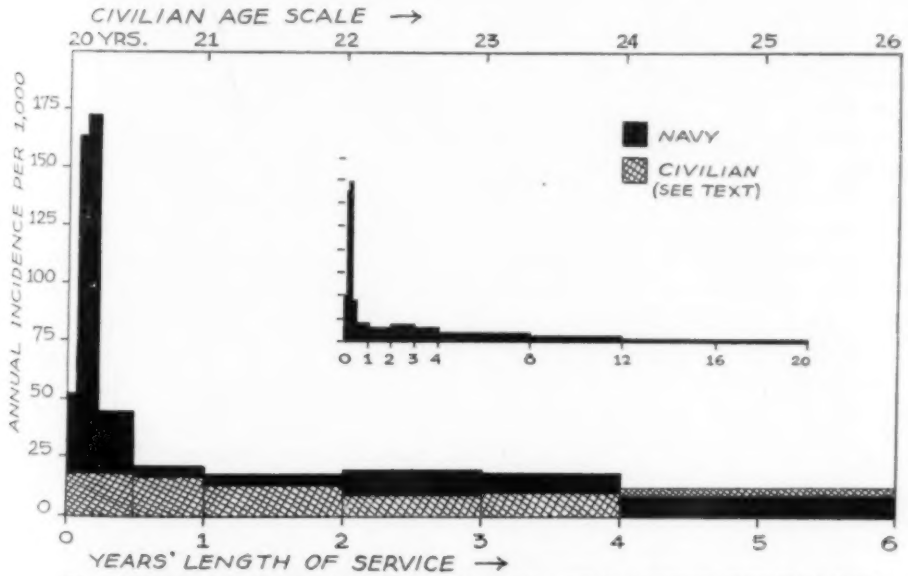


Fig. 1. COMMUNICABLE DISEASES, ENLISTED PERSONNEL, U. S. NAVY, 1935 & 1936.

men at the training stations who act as instructors. After leaving the training stations, the new men intermingle with men of all lengths of service and gradually, themselves, grow older in the service.

From the foregoing it can be seen that this study is concerned with more than just the military aspects of changing length of service. We might say that we have a fixed experiment in human epidemiology. Our "herd," so to speak, is the enlisted personnel of the Navy. There is a constant flow of individuals into and out of the "herd." The new ones are placed in a "cage," the training stations. A certain number remain for as long as 7 months but most of them leave the "cage" after 3 months to mingle with the main "herd." A smaller number of the older members of the main "herd" return to the "cage" and are in contact with the new individuals. Having exact data on these movements of individuals and on associated morbidity and mortality, we can study them closely from the experimental epidemiological viewpoint.

We find that, upon combining the 2 years' experience, the person-years were distributed as shown in Table II. The numbers of communicable diseases were as shown in the third column, and the annual rates in the last column resulted. When the rates are put in diagrammatic form they produce the picture shown in Figure I. The solid bars represent our rates and the cross-hatched ones show age-specific rates taken from the report by Collins[1] of the incidence among 9,000 white families in 18 states surveyed during 1928–1931. Exact comparison of these two sets of rates is not attempted. The civilian rates are included merely as a physical basis for associative comparison. The average age at enlistment was 20.01 years. Age and length of service are necessarily closely correlated.

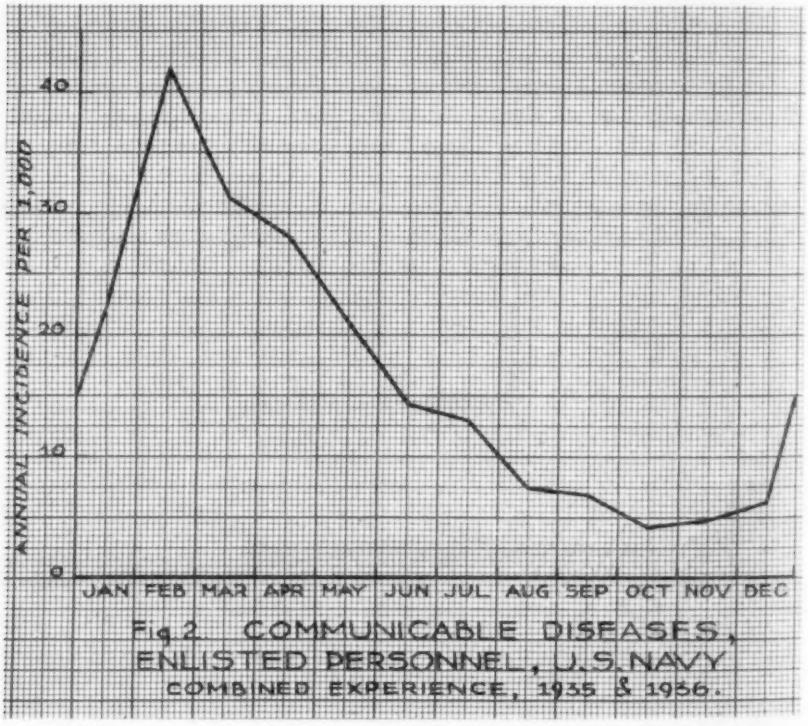


Fig 2. COMMUNICABLE DISEASES, ENLISTED PERSONNEL, U.S. NAVY COMBINED EXPERIENCE, 1935 & 1936.

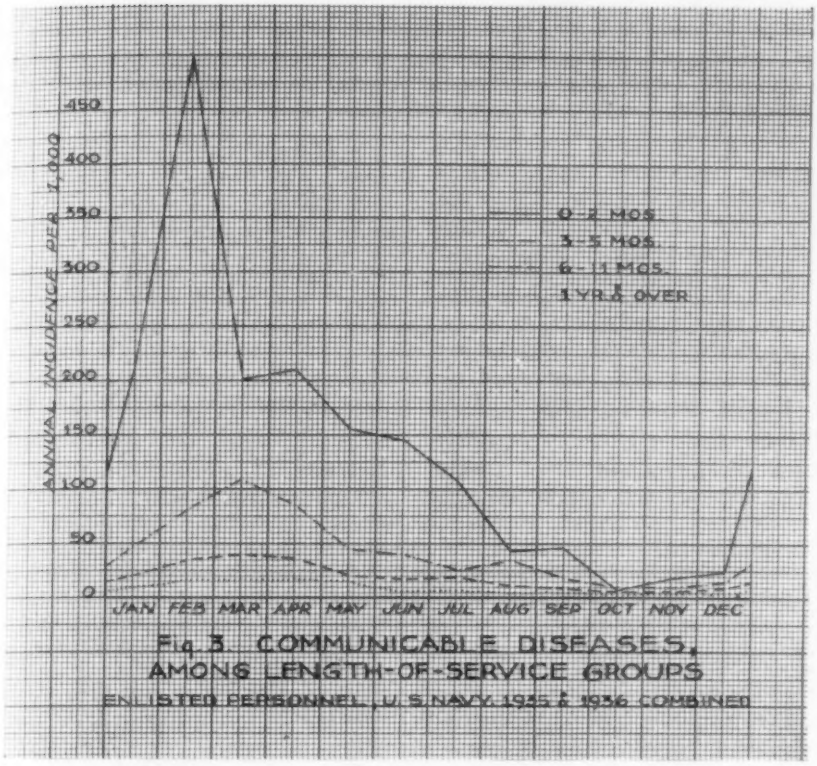


Fig. 3. COMMUNICABLE DISEASES, AMONG LENGTH-OF-SERVICE GROUPS
ENLISTED PERSONNEL, U. S. NAVY, 1935 & 1936 COMBINED

On this basis the civilian rates for the ages of 20 to 25 were considered to cover ages of men with from 0 to 5 years of service.

TABLE II

Person-Years and Numbers of Cases According to Length of Service

Length of Service	*No. Person Years*	*No. Cases*	*Ann. Rate per 1,000*
Less than 1 month	2,492	129	51.77
1 month	2,427	399	164.40
2 months	2,455	424	172.71
3– 5 months	7,209	321	44.53
6–11 months	13,654	255	18.68
1 year	21,707	363	16.72
2 years	14,293	253	17.70
3 years	10,000	167	16.70
4– 7 years	36,686	315	8.59
8–11 years	27,871	146	5.24
12–15 years	22,983	80	3.48
16–19 years	13,545	44	3.25
20 years and over	991	3	3.03
Total	176,313	2,899	16.44

During the first month the annual rate of communicable disease incidence is 51.8 per 1,000. During the next 2 months it rises to 172.7. This peak rate, for a group of men slightly over 20 years of age, is the same as that observed by Collins among children 9½ or 10 years of age. The initial rise of incidence is steep and the subsequent drop precipitous. Within 2 months it drops to one-fourth of the peak rate, within 6 months to one-eighth, and within a year to one-tenth. It would be difficult to assume that these rapid changes in incidence are due to changing calendar age. That they are associated with changing environment and adaptation to it seems much more likely.

Seasonal factors are important in the incidence of these diseases. The seasonal curve for the entire group is shown in Figure II. The peak is in February and the trough is in October. The peak rate is about 10 times the trough rate.

TABLE III

Monthly Incidence of Communicable Diseases by Length-of-Service Groups, Enlisted Personnel, U. S. Navy, 1935 and 1936 Combined Annual Rates per 1,000*

	0–2 Months' Service	3–5 Months' Service	6–11 Months' Service	1 Year's Service and Over	Totals
January	213.77	48.31	19.86	11.08	22.84
February	498.00	79.73	33.66	18.36	41.98
March	200.33	107.83	37.75	18.57	31.17
April	209.83	85.03	36.77	16.92	27.89
May	156.58	45.87	20.13	14.53	21.04
June	145.90	40.97	17.30	6.81	14.29
July	105.92	25.93	19.41	6.69	12.76
August	43.63	34.91	12.06	3.71	7.23
September	46.55	18.17	8.63	4.22	7.06
October	9.99	10.70	5.31	3.50	4.24
November	17.98	10.29	3.89	3.98	4.88
December	24.82	14.27	10.40	4.65	6.36
Totals	129.09	44.49	18.68	9.32	16.44

* January, for example, represents the combined experience of January, 1935, and January, 1936.

It becomes of interest to know how the different length-of-service groups react to seasonal influences.

For convenience of the diagram and because the groups shown in Figure III are representative, the 13 length-of-service groups were combined into 4 as follows: 0–2 mos., 3–5 mos., 6–11 mos., and 1 year and over. Just as was expected from Figure I, the groups with less service have the higher incidence. Only in two instances do any two curves meet, and these are at trough levels. Also, the seasonal peaks flatten out as length of service increases. In order to get away from absolute numbers and to examine more closely the proportional variations of the lower curves, the same seasonal rates were plotted on an arithlog scale in Figure IV.

Eighteen months are shown in order to avoid breaking the seasonal cycles. Each month represents the combined, corresponding months of the 2 years. For example, the January rate shown here represents both January, 1935, and January, 1936. The rates are on an

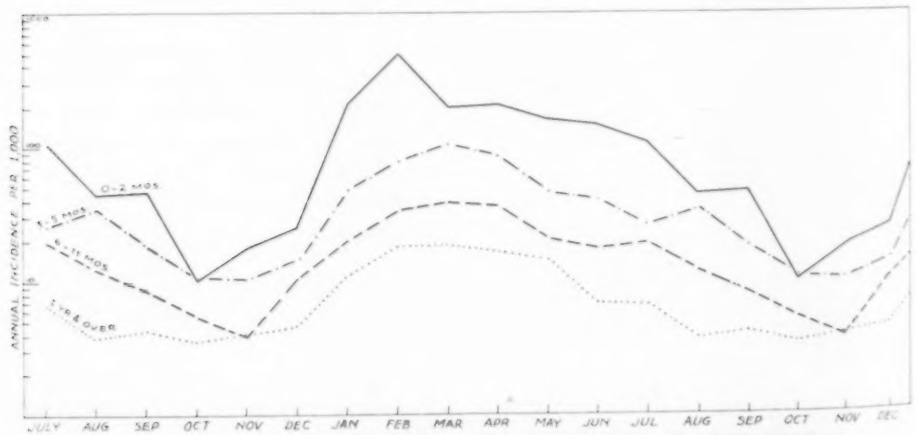


Fig. 4. COMMUNICABLE DISEASES BY LENGTH OF SERVICE ENLISTED PERSONNEL, U.S. NAVY, 1935 & 1936 COMBINED.

annual basis. On the arithlog scale the flattening of seasonal peaks is still apparent. The ratio of peak to trough decreases as length of service increases. In ascending order of the 4 length-of-service groups, the ratios are 50:1, 10.5:1, 9.9:1, and 5.3:1. As length of service increases the peak tends to come later in the season. In Figure IV the abscissal scale is shown somewhat out of proportion in order to bring out this point.

No attempt is being made at the present time to draw conclusions from the facts which have been presented. Many more approaches are planned. Cook [2] observed that men entering the service during the fall and winter months suffer a much higher incidence of cerebrospinal fever during their first year than those entering during the spring and summer. It will be of interest to know to what extent this holds true for any or all of the other communicable diseases and to split up the phenomenon by single calendar months of enlistment. It will also be of interest from both epidemiological and military points of view to know whether these differences during the first year are equalized during later years.

Throughout all of this work the training station population and rates can be separated from the others for comparison. It will be of particular interest to know the results of application of these methods to the acute respiratory diseases. Sick days, mortality, and fatality will also be analyzed in the same way.

REFERENCES

1. Collins, S. D. Age Incidence of Specific Causes of Illness. *Pub. Health Rep.*, 50:1404 (Oct. 11), 1935.

2. Cook, S. S. Incidence of Cerebrospinal Fever in the United States Navy as Related to Length of Service and Season of Enlistment. *Am. J. Hyg.*, 23:472 (May), 1936.

Progress Under the Operation of Title VI of the Social Security Act*

C. E. WALLER, M.D., F.A.P.H.A.
Assistant Surgeon General, U. S. Public Health Service, Washington, D. C.

A WEEK seldom passes in which a request is not received by the Public Health Service from someone for a statement of progress made under the Social Security Act. As might be supposed, a large proportion of such inquiries come from members of the Congress; many come from students of sociology and government in colleges and universities, from women's study groups, research agencies, and magazines carrying both professional and popular articles.

It would seem a simple matter to write a report each year which could be printed and passed out in routine fashion that would serve current demands. Unfortunately this is not possible, since each request is more or less individualistic in the variety and combination of data for which it calls. With few exceptions, therefore, each inquiry must be handled from a separate viewpoint. Although the furnishing of this material in response to the various shades and varieties of demands becomes an irksome task, it is one which must be regarded rather in the light of an opportunity, since those who seek information become the mouthpieces for spreading the message of accomplishment through the enlarged facilities which have been placed at our disposal.

A resumé of progress necessarily connotes a comparison of some kind. It would be fortunate indeed if there were some simple and reliable yardstick by which progress could be accurately gauged. Most desirable of all would be a precise measurement of the number of lives saved, the illness prevented, health and happiness promoted, and economic saving accomplished. It is believed, however, that the unequivocal answer to these questions will never be entirely satisfactorily determined on a quantitative basis. Failing in this, one turns next to a measurement of activities, extent of organization, enumeration of recruits to the public health personnel, and the amount of money spent in the extension of health service. Of this group of criteria the most significant is the activity record, though this is to a very large degree deceptive and unreliable as a means of evaluation of progress. In like manner the personnel employed and the health machinery established may be looked upon not as yardsticks of accomplishment, but as corroborative evidence only. Of all the indices of progress, the one most readily available and subject to accurate measurement is the amount of money

* Read before the Western Branch American Public Health Association at the Ninth Annual Meeting in Portland, Ore., June 6-8, 1938.

spent for public health work. The natural tendency, therefore, in estimating public health progress, is to resort to a listing of funds made available for health work, though in fact this is one of the least significant standards.

In an effort to portray the health progress made under the Social Security Act it will be understood that only the roughest sort of an estimation can be made by the use of any and all of the factors, whose limitations have been briefly pointed out. At best the tangible evidences of public health dividends are immediately discernible only in isolated instances. Occasionally some dramatic example of life saving or sickness prevention is observed. But public health expenditures must be looked upon as long term investments founded on faith in the efficacy of public health methods which are believed to be sound. Just as the horticulturist plants a tree knowing full well that he will have to wait several years for the harvest of fruit, so the public health worker must be reconciled to look for the full fruition of his labors within the next decade or possibly within the next generation. For the present, therefore, the report of progress must deal with evidences of means to the end rather than the end itself.

The Social Security Act is now well advanced on its third year of operation. Since the passage of the Social Security Act the maximum amount of money authorized has been appropriated each year. When it became effective in February, 1936, health organizations generally were at a low ebb. They had suffered heavily from reduction of funds in the economy wave associated with the general financial stringency. Many essential health services were crippled or discontinued because of the loss of personnel; and the morale of many of those who remained was sadly impaired as a result of drastic salary reductions. The funds appropriated under Title VI of the Social Security Act brought welcome relief from these straitened conditions. A considerable portion of the Social Security funds was utilized to repair the breaches in the public health structure that had been created by the economic slump. After having done this, the state health authorities turned their attention next to expansion of existing health services and the addition of new activities.

One of the most significant outgrowths of the program under Title VI has been the movement toward higher standards for public health personnel. At the meeting of the State and Territorial Health Officers in 1936, qualification specifications were adopted with the view to eliminating the unfit from the ranks of public health service. Although these standards were not compulsory, they placed upon the state health officers a moral obligation to abide by them. The bane of the conscientious health administrator's hopes and ambitions has always been pressure from political influences for the employment of incompetent political favorites. Without recourse to qualification standards as a condition of employment the state health officers would have been hopelessly swamped with job seekers whose only claim for consideration was allegiance to some person or party. While this set of qualification standards was a life-saver to health administrators, it was also a two-edged sword. The state health officers found themselves suddenly in possession of greatly increased funds, and were confronted with the problem of how to use these funds in accordance with the personnel policy to which they had subscribed.

Trained personnel to fill new positions was almost wholly lacking. Although funds were made available for the training of personnel, it takes time to locate and select suitable trainees, and more time still to give the tech-

nical training. To meet this latter emergency, short or semester courses at training centers were instituted.

In both state and local health programs the personnel problem was a serious handicap in the beginning. In addition to this the local health program has been and continues to be in many localities retarded by the lack of local organization. It is generally conceded that local full-time health units wherever consistent with state laws and policies are the very backbone of a state-wide health program. Local health units, however, call for local appropriations to be pooled with funds from outside sources. It takes time, energy, and initiative to sell health units to local appropriating agencies. Even in those states where this work was vigorously undertaken, the time interval necessary for the consummation of local health budgets resulted in an accumulation of funds in state allotments which must remain unpaid until such time as budgets should be submitted for the operation of these projects.

The limitations which have been pointed out with respect to personnel and local programs account for the surpluses that accumulated during the initial stages of the operation of Title VI of the Social Security Act. At the end of the first 5 months, June 30, 1936, there was an accumulation of $881,000 out of a total appropriation of $3,333,000 for that period. At the end of the fiscal year 1937 (June 30), the surplus was $1,116,000. The indications are that at the close of the fiscal year 1938 (June 30), the surplus will not exceed $200,000. In each instance the surplus has been added to the appropriation for the ensuing fiscal year, and reallocated to the states. It is obvious from the foregoing that the expansion of health services has been stepped up to a level almost commensurate with the funds available. In fact, the machinery which has been developed now exceeds the facilities for maintenance at its present level, so that either more state and/or local funds will have to be secured in certain states, or activities will have to be curtailed.

As you probably know, the regulations governing the payment of funds from Title VI to the states specify certain matching requirements. Of special interest is the requirement which calls for the appropriation of new funds for public health work. The belief that this requirement has been effective in stimulating increased state and local appropriations is strongly supported by the figures indicating the excess of appropriations since the passage of the Social Security Act over the previous level. According to the latest data which were tabulated about a year ago this excess was estimated at that time to be at least $7,500,000. Undoubtedly this figure has been materially augmented during the year following this tabulation.

How the states have invested the funds paid them from Title VI will be of interest as an indicator of the activities which are being most prominently featured. The following tabulation shows a general classification of purposes for which the sum of $10,304,663.50 was budgeted by the states for the fiscal year 1938.

Prior to the inauguration of the Social Security program, 667 counties in the United States were listed as being served by full-time health officers. The number of counties so served as of December 31, 1937, was 1,166, from which it would appear that there has been an increase of 74.8 per cent in the number of counties under full-time direction, more or less directly as a result of aid extended through Title VI of the Social Security Act. There are 6 states completely covered by local full-time health service as compared with 3 on January 1, 1935. In spite of these highly encouraging facts, however,

PURPOSES FOR WHICH ALLOTMENTS TO STATES FROM FUNDS APPROPRIATED UNDER THE PROVISIONS OF SECTION 601, SOCIAL SECURITY ACT, FOR THE FISCAL YEAR 1938, WERE BUDGETED, TOGETHER WITH AMOUNTS THEREOF, AS OF JANUARY 1, 1938

Purpose	*No. of States*	*Amount*
Local Health Services	45	$4,219,935.79
Training of Public Health Workers	51	1,485,467.29
Venereal Disease Control	43	827,325.56
Sanitary Engineering	44	539,559.52
Promotion and Supervision of Local Health Services	36	527,821.00
Laboratory Research	41	412,086.09
General Administrative Expenses	48	372,109.53
General Preventable Disease Activities	38	362,453.19
Industrial Hygiene	21	355,654.21
Tuberculosis Control	25	280,641.50
Vital Statistics	32	161,149.14
Public Health Nursing	21	144,370.00
Malaria Control	9	129,323.00
Health Education	23	112,613.00
Pneumonia Control	4	85,099.68
Dental Hygiene	8	70,615.00
Rodent Plague Control	5	58,748.00
Food and Drug Inspection	5	54,895.00
Trachoma Control	5	34,263.00
Cancer Control	5	29,614.00
Maternal and Child Health	7	25,540.00
Mental Hygiene	1	15,380.00
	Total *	$10,304,663.50

* Includes unexpended balances

there are still 10 states which have no local health service corresponding to the generally accepted standards implied by this term.

The stimulation of a new interest in industrial hygiene activities in state health departments has been particularly noticeable—funds allotted to this work having increased from approximately $30,000 prior to 1936 to well over $300,000 for the current year, and the number of states engaged in this work has increased from 3 to 23.

There has also been evident in the South a renewed interest in state health department facilities for malaria control.

The tremendous wave of public interest and enthusiasm in the campaign against syphilis speaks for itself and needs little comment here.

One of the most interesting developments in the program has been the increase in public health nursing service. Between 1931 and 1937 the total number of public health nurses employed by local and state health agencies in the United States increased from approximately 16,000 to 18,000. This represented an increase of 22.3 per cent in nurses employed by official agencies and a decrease of 7 per cent in the number employed by nonofficial organizations. The most significant change has been noted with respect to rural areas, where there has been an increase of 32 per cent in the number of nurses since 1931.

Most of you are familiar with the program for training state and local public health personnel which was inaugurated in 1936 under the provisions of Title VI of the Social Security Act. It may be of interest to you to know that nearly 3,000 individuals had been given special postgraduate training in public health work up to June 30, 1937, and that during the current fiscal year

ABRIDGED REPORT—LOCAL HEALTH SERVICES EMPLOYING TITLE VI FUNDS WITHIN THE STATE

	Total this Period	*Total this Year*
COMMUNICABLE DISEASE CONTROL		
Admissions to service (A 1)	.....	333,735
Consultations with physicians (A 2)	.....	68,422
Field visits (A 3–9)	.....	487,650
Smallpox immunizations (A 15)	.....	876,489
Diphtheria immunizations (A 16–18)	.....	677,359
Typhoid fever immunizations (A 19)	.....	1,660,265
VENEREAL DISEASE CONTROL		
Admissions to medical service (B 1)	.....	363,810
Clinic visits (B 3)	.....	2,175,267
Field visits (B 4)	.....	160,603
TUBERCULOSIS CONTROL		
Individuals admitted to medical service (C 1)	.....	135,508
Individuals admitted to nursing service (C 2)	.....	153,859
Clinic visits (C 5)	.....	202,659
Nursing visits (C 7, 8)	.....	406,269
MATERNITY SERVICE		
Cases admitted to medical service (D 1, 8)	.....	52,400
Cases admitted to nursing service (D 2, 7, 10)	.....	164,633
Visits by antepartum cases to medical conferences (D 3)	.....	84,666
Nursing visits (D 5, 6, 11)	.....	471,173
INFANT HYGIENE		
Individuals admitted to medical service (E 1)	.....	78,937
Individuals admitted to nursing service (E 2)	.....	188,954
Visits to medical conferences (E 3)	.....	155,837
Nursing visits (E 5, 6)	.....	527,961
PRESCHOOL HYGIENE		
Individuals admitted to medical service (E 8)	.....	144,449
Individuals admitted to nursing service (E 9)	.....	259,655
Visits to medical conferences (E 10)	.....	191,959

the number receiving training will be in the neighborhood of 1,300. Among those who have received training are 651 medical officers, 162 engineers, 1,540 nurses, 451 sanitation officers, 88 laboratory workers, and 60 others. More than 200 medical officers will have received a full 1 year course in public health administration at the close of the current year, and 161 nurses will have been given a whole year of postgraduate work.

It is impossible to devise any reporting system that will accurately record all services performed by local health units. Even the most extensive report forms will not do this. It is, however, incumbent upon the Public Health Service to secure some record of activities carried on with Social Security funds. For this purpose an extremely abridged report consolidated for all local health services employing Title VI funds within a state is required quarterly, with the view to securing a representative cross-section of work performed. There is herewith presented the consolidated report from all the states for the fiscal year 1937, which will serve to convey some idea of the volume of local health work in progress. It should be noted, of course, that this work is financed only in part (roughly 50 per cent) by Social Security funds.

If public health is to pursue a course of progress its program should be readily adjustable to varying needs and circumstances. Local problems are en-

ABRIDGED REPORT—LOCAL HEALTH SERVICES EMPLOYING TITLE VI FUNDS WITHIN THE STATE (cont.)

	Total this Period	*Total this Year*
PRESCHOOL HYGIENE (cont.)		
Nursing visits (E 12, 13)	.....	522,542
Inspections by dentists or dental hygienists (E 14)	.....	48,484
SCHOOL HYGIENE		
Inspections by physicians or nurses (F 1)	.....	7,617,214
Examinations by physicians (F 2)	.....	1,181,080
Individuals admitted to nursing service (F 4)	.....	1,431,642
Nursing visits (F 5, 6)	.....	2,040,995
Inspections by dentists or dental hygienists (F 7)	.....	651,940
ADULT HYGIENE		
Medical examinations (G 1–5)	.....	179,417
MORBIDITY SERVICE		
Medical visits (H 3, 4)	.....	433,013
Nursing visits (H 5, 6)	.....	524,766
Admissions to hospitals (H 7)	.....	44,845
GENERAL SANITATION		
Approved individual water supplies installed (J 1)	.....	15,483
Approved excreta disposal systems installed (J 2, 3)	.....	199,960
Field visits (J 4–11)	.....	1,714,628
PROTECTION OF FOOD AND MILK		
Food handling establishments registered for supervision (K 1)	.....	155,491
Field visits to food handling establishments (K 2)	.....	523,315
Dairy farms registered for supervision (K 3)	.....	62,350
Field visits to dairy farms (K 4)	.....	141,751
Milk plants registered for supervision (K 5)	.....	12,162
Field visits to milk plants (K 6)	.....	45,000
LABORATORY		
Specimens examined (L 1–21)	.....	2,785,744

countered in some states which are nonexistent in others; problems common to all states require in some states a heavier weighting in the health program than is given in others. The advancement of basic scientific knowledge, changing public sentiment, and changing social conditions are ever introducing new problems to which the public health program must be adjusted. For these reasons a progressive public health program is flexible, and responsive to new ideas. In this connection I would invite your attention particularly to some of the broader phases of public health responsibility. In the address of Josephine Roche, Assistant Secretary of the Treasury, at the meeting of the American Public Health Association in New York, she clearly defined one of the most urgent issues in the following language:

> The challenge which confronts public health workers today is in essence the same as that which confronted the great leaders of the past when human life was wiped out by epidemics and infectious diseases. The objective for which they strove is identically the same as yours today—to save life, conserve health, to prevent death and disease. So, as I stated earlier, you take on no new function when you turn to new ways and means to meet this unchanging objective. You only face the fact that your battle in the laboratory to find and conquer the causes of destructive diseases, and in the field to apply this knowledge, must not only be continued but widened and extended to the social and economic front. Death and disease are no less your responsibility to prevent because the cause for them has shifted, demanding care of the individual by public means when that individual's economic status makes im-

possible his securing for himself medical care and facilities necessary for saving life or health.

An appraisal of progress in public health service under the Social Security Act must take into account the degree to which public health workers have attuned themselves to the opportunities for life saving, by whatever means, in the future. This question can be answered only by each one of you individually. The future destiny of public health as a factor in our social structure will depend in a large way upon the intelligence and courage with which this challenge is met.

Annual Roll Call November 11–24, 1938

Fleas as Vectors of Plague*

C. R. ESKEY, M.D.

Senior Surgeon, U. S. Public Health Service Laboratory, San Francisco, Calif.

IT is now well established that fleas are capable of transmitting plague from one host to another. Innumerable species of these parasites have been found on animals throughout the world. Over 80 species have been collected from wild rodents in our western states and new ones are being discovered every year.

As a rule one species of animal seldom acts as the natural host for more than 3 or 4 species of fleas in the same locality, and sometimes for only one. Some varieties of fleas may naturally infest several species of animals, but usually such hosts belong to the same generic group. A few, like the sand flea, appear to utilize almost any animal as their normal host. When different kinds of animals live in close association or come in contact with each other, fleas peculiar to one may be found on others that are not their usual hosts. That fleas may subsist for long periods on blood of animals foreign to them has been demonstrated in the laboratory by keeping many different wild rodent fleas alive for 2 to over 5 months when fed on guinea pigs.

Animals that continually live in the same nesting place, as is usually the case of those dwelling in burrows, harbor more fleas than those that use their nests only for rearing their young. When ground squirrel nests are excavated during the summer, one may see enormous numbers of larvae wiggling about in them, and it is often possible to collect many adult fleas from the nests. Therefore, in determining the extent of the flea infestation of rodents, one must take into consideration the insects that are present in the nesting places as well as those found on the animals.

Climatic conditions play such an active part in determining the prevalence of fleas infesting domestic rodents that in some localities having unfavorable climates there are insufficient vectors to cause plague epizoötics. The potential danger of plague becoming established among wild rodents of any region has little relationship to its climate, being chiefly dependent upon the kind of rodents present and the extent of their population, because wild rodent fleas are as acclimated to their environment as are their wild hosts.

Experimental transmission of plague by fleas—The usual procedure followed in testing the ability of fleas to transmit plague by placing them on an infected rodent, then, after its death, allowing the exposed parasites to infest another animal, provides very little information regarding plague infection of fleas. Positive results obtained from such experiments might be due to infected flea feces rather than to the bites of the insects.

* Read before the Western Branch American Public Health Association at the Ninth Annual Meeting in Portland, Ore., June 6–8, 1938.

During the past 2 years experiments have been conducted at the Public Health Service Laboratory in San Francisco in which approximately 1,200 fleas have been tested individually; that is, each flea has been kept in a test tube from the time it was collected until its death. This method provides exact knowledge regarding the time that fleas become plague infected; the period that elapses before they transmit the disease; the length of time the insects survive infection; and, the identity of each flea can be ascertained after its death. Plague infection of living fleas can be determined by inoculation of their feces, and of dead fleas by injecting their bodies into guinea pigs.

Infecting fleas with plague—From the literature on plague one might gain the impression that a flea which has fed at any time on an infected animal might transmit the disease. In reality there is only a short time before death from acute plague that there are sufficient organisms in the blood to infect fleas. The blood of guinea pigs has not been infectious to fleas earlier than 36 hours before death and it is probable that fleas are not infected by the blood of other rodents over a longer time. During this short interval before death the degree of septicemia varies greatly in different guinea pigs. *Pasteurella pestis* may be found in every microscopic field of the blood smears of some acutely sick animals, while in others, blood cultures are required to demonstrate the organisms. As would be expected from the results of blood examinations, the percentage of fleas infected experimentally after feeding on different animals has varied greatly. In most cases only a very small number of fleas have been infected even when the blood examination demonstrated that it contained many organisms, and in no instance has it been possible to infect all fleas fed on one animal. In view of these observations it may be stated that when plague infected animals are killed during the early stages of the disease, or before the development of septicemia, none of the fleas on the animal will have been infected by its blood. Furthermore, even when animals have died of plague, only a small percentage of the fleas on the dead hosts are liable to be plague infected, because only a portion of the fleas that have fed during the septicemic period will be infected, and some fleas do not feed often enough to have ingested blood at this time.

It is doubtful whether fleas ever become infected by feeding on sick animals that recover from acute illness, or that have mild sub-acute infections. In one instance during the experiments at San Francisco a large number of fleas were fed daily for 3 days on a guinea pig that appeared to be so ill each day that it would die in a few hours, and then it began to show signs of improvement which went on to complete recovery. None of the parasites that fed on this animal were infected and blood cultures made during the 3 days of acute illness remained sterile. This guinea pig was inoculated again with plague and recovered a second time.

Multiplication of Pasteurella pestis in fleas—During the act of feeding, blood passes through the esophagus into the proventriculus, and then through a short tubular structure into the stomach proper. The blood is stored during digestion in both the proventriculus and stomach so that ingested bacteria may multiply and form clumps in either organ. More than one mass may be present in the stomach and remain discrete for a long time or coalesce with the formation of one large growth. The rapidity with which the masses grow varies greatly in different fleas. In some only small clumps are present after two or more months, while very rapid growth may occur with extension of the masses into the proventriculus.

In many instances the stomachs are greatly distorted in shape and size by the bacterial growths and have a rather characteristic appearance, being contracted into a more or less tubular form with jagged margins.

Bacterial growths in the proventriculus produce great enlargement of this structure and nearly always extend forward into the esophagus, causing it to be distorted and dilated. Whether or not the masses formed by *P. pestis* develop primarily in the proventriculus or invade it from the stomach, the end results are the same, leading eventually to partial, and then complete obstruction of the esophagus. This blockage has been observed to occur as early as 4 days after plague infection, or it may not develop until several months after ingestion of *P. pestis*. In the case of a number of fleas killed over 3 and 4 months after infection there were no visible masses in the proventriculus and only small bacterial growths were seen in their stomachs.

The dark brown masses formed by the multiplication of *P. pestis* in fleas are not solid clumps of viable organisms but are composed chiefly of colloidal-like material so adhesive that the masses can usually be dissected out intact, and require rough handling to tear them apart. In stained specimens coccobacilli are found in large numbers on the surface of the growths, on the adjacent membranes of the stomach, and in any fluid that may be present.

Transmission of plague by flea bites—From such information as one may obtain from textbooks it would seem that when a host is bitten by a plague infected flea infection will naturally follow the bite. This idea is further from the truth than the belief that all fleas which have fed on an infected animal will be carriers of plague. In San Francisco over 300 fleas have been infected, and they have fed several thousand times and still their bites have not been infectious. There were individual infected fleas that fed from 50 to 100 times on guinea pigs without transmitting plague. Less than 10 per cent of wild rodent fleas acted as vectors in the laboratory, indicating that in nature only a very small percentage of fleas which have fed on infected wild rodents will really infect other animals by their bites.

As long as the bacterial masses do not prevent the passage of ingested blood into the stomach the bites of plague infected fleas are harmless. It is only after development of obstruction to the flow of blood and regurgitation which carries the organisms into the wound occurs that the bites of fleas are infectious. In the course of experiments fleas have transmitted plague as early as 5 days and as late as 147 days after they had ingested *P. pestis*.

Normal fleas of nearly all species seldom insert their probiscides more than once and satisfy their hunger in less than 5 minutes, while the efforts of blocked fleas to feed are often characterized by prolonged exertions to secure blood in one place, or by shifting from one site to another, until they apparently become exhausted. Sometimes a tiny drop of regurgitated blood exudes from the proboscis of an obstructed flea when it is withdrawn from the skin. Many fleas with complete obstruction of the esophagus fail to transmit plague regardless of how prolonged their exertions to feed have been. This may be due to the fact that the blocked fleas are too weak for their efforts to cause regurgitation, or the organisms are not detached from the bacterial growths to be carried into the wounds. After death the obstruction of the esophagus is easily seen with the microscope and frequently fresh red blood is visible in the esophagus in front of the obstructing mass.

Period fleas are infectious—Very few infected fleas survived more than 24

to 48 hours after there were indications that there was an obstruction to the flow of the blood meal to the stomach, regardless of whether or not their attempts to feed were infectious. Of the 45 fleas which transmitted plague in the laboratory only about 20 per cent infected more than one animal, although some of those that failed to cause multiple transmissions attempted to feed after they had infected one guinea pig. Five fleas infected 3 to 5 guinea pigs and one infected 10 animals. This latter flea and one that infected 5 animals transmitted the infection for 5 and 10 days respectively. The infectious life of these 2 fleas was exceptionally long because most blocked fleas live only a short time and few of them are capable of infecting more than one host before they die.

Transmission by male and female fleas—Although many male fleas of different species were used in the laboratory experiments, only 2 of the 45 that transmitted plague were males, which is rather conclusive evidence that female fleas are much better vectors than males.

Plague infection of different species of fleas—During the experiments in San Francisco it has been possible to demonstrate plague infection of 20 different species of fleas, 15 of which were collected from wild rodents, 3 from domestic rats, and 2 miscellaneous fleas. Of the different species found to be plague infected only 11 transmitted the infection to guinea pigs. Domestic rats, prairie dogs, chipmunks, and several varieties of ground squirrels acted as the natural hosts of the fleas which were vectors of plague in the laboratory. Failure to obtain experimental transmission with certain species of fleas does not prove that they are incapable of acting as transmitting agents. In fact the results of laboratory investigation tend to indicate that any flea, regardless of species, that feeds on septicemic blood may become plague infected, and later blockage of the esophagus may occur which would make the flea a potential vector.

Although there is a possibility that all fleas may act as transmitting agents of plague, epidemiological data and laboratory studies clearly demonstrate that the rat fleas, *Xenopsylla cheopis*, are much more active and dangerous vectors of plague than any others tested. A second species of rat fleas, *Nosopsyllus fasciatus*, was found to be as capable of transmitting plague as any of the wild rodent fleas. Some species of fleas seem to be very feeble vectors.

When compared with all other species studied, *Xenopsylla cheopis* are considered the most efficient transmitting agents because they are more readily infected when fed on septicemic blood, and they transmitted the disease to many more guinea pigs. They also tend to become blocked earlier and to remain infectious for a longer time than other fleas. Blocked cheopis are very persistent in their efforts to obtain blood and in many instances they produced 2 to 5 foci of infection on the abdomen of guinea pigs where they had made wounds in their attempts to feed. Some cheopis appear to be capable of infecting guinea pigs every time they insert their probiscides. Multiple foci of infection rarely followed the bites of any fleas except cheopis.

The average length of life of plague infected *Xenopsylla cheopis* is less than 1 month due to the early involvement of their proventriculus by the bacterial growth. Many cheopis did not survive infection 2 weeks, and the longest that any of them lived was about 50 days, while many infected fleas from wild rodents and the rat fleas *Nosopsyllus fasciatus* remained alive from 2 to over 4 months before they became blocked and died.

If different species of fleas do not have the same ability to transmit

plague, and if the infection persists much longer in some species than others, it may be assumed that the character of plague epizoötics will vary according to the kinds of fleas involved in its dissemination. For instance, an epizoötic in a community where *Xenopsylla cheopis* are prevalent should be much more severe and accompanied by a greater incidence of human infection than would be the case in a locality where the spread of the infection depended on one or more of the other species of fleas studied in the laboratory. On the other hand, in regions where cheopis are the only rodent fleas present to maintain an epizoötic, and conditions arise which tend to cause the disease to subside in rodents, so that its continuation depends upon the persistence of the infection in fleas the epizoötic would be more likely to disappear than would be the case if other fleas were present, such as *Nosopsyllus fasciatus*, which may remain infected for a much longer time than cheopis. Wild rodent fleas may remain infected for several months so that it is possible for plague infection to be carried over the hibernating period of wild rodents in fleas.

Plague infection of flea feces—Virulent plague bacilli can be demonstrated in the feces of nearly all plague infected fleas by inoculation into guinea pigs. Some species of fleas do not excrete virulent organisms as constantly as others. The length of time fleas have been infected does not affect the virulence of the bacteria in their feces. In some cases the inoculation of excreta collected at the time fleas have died has produced plague in guinea pigs when injection of the fleas gave negative results.

Since Bacot and Martin demonstrated that fleas transmit plague when feeding, the old idea that transmission followed rubbing infected feces into minute wounds has been more or less discarded. However, it is possible that plague is disseminated among rodents much more frequently through the agency of infectious feces than is generally believed. It is difficult to understand how rodents escape infection in this manner when we consider that one or more infected fleas may live for several months on their hosts and during this time continually deposit large numbers of virulent plague organisms in the fur and on the skin of rodents which will cause infection if rubbed into minute abrasions. It is not necessary for the infectious feces to gain entrance to the hosts' bodies immediately after they have been deposited in order to induce infection because recent experiments conducted at San Francisco have shown that *P. pestis* may retain its virulence as long as 4 weeks in dried flea feces kept at room temperature.

It is unlikely that humans contract bubonic plague through the agency of flea feces because rodent fleas do not remain with human hosts for a very long time and there is slight chance for them to deposit feces on the skin of man. Fleas rarely defecate when feeding and the lesions of rodent fleas seldom cause itching.

Tendency of rodent fleas to attack man—It has been known for many years that domestic rat fleas often bite man, but there is little knowledge regarding the facility with which wild rodent fleas will attack humans. From the fact that 6 different species of sylvan fleas—or all that have been tested in sufficient numbers at the laboratory in San Francisco—have been found to feed on human blood, it may be assumed that many species of wild rodent fleas will bite man. In one instance 18 fleas were collected from a ground squirrel nest shipped to the laboratory and each flea as captured was placed on the arm of one of the workers with the result that 17 of them fed almost as soon as they touched the

skin. It has been possible to keep several kinds of wild rodent fleas alive for a number of days by feeding them on human blood, but others of the same species died of starvation before they would feed on man. Our observations have shown that all rodent fleas have to be starved to a greater extent before they will accept human blood than is required for them to feed on rodents that are not their natural hosts. Many fleas that have refused to bite man were found to feed at once when placed on rats or guinea pigs. From these findings it would appear that starved, blocked, plague infected fleas of wild rodents may attack man when they come in contact with the skin so that there is danger of humans contracting bubonic plague in all regions where wild rodents are infected.

CONCLUSION

Twenty different species of fleas have been infected with plague in the laboratory but only 11 species, 9 of which were collected from wild rodents, transmitted the disease to guinea pigs; only a portion of fleas fed on plague infected guinea pigs a few hours before the animals died were infected, and of those infected only a small percentage transmitted plague to other guinea pigs. Flea bites are not infectious until the masses formed by *P. pestis* cause obstruction of the esophagus. This condition may develop in a few days or not for over 4 months. Few fleas ever infect more than one animal and blocked, infectious fleas generally die within 48 hours of the time there is evidence of obstruction to their stomachs.

Infected fleas are constantly excreting virulent coccobacilli in their feces which may survive for as long as 4 weeks in the dried excreta so that rodents are exposed to infection from the feces as well as the bites of fleas.

There is always a possibility of humans contracting bubonic plague from blocked fleas present on wild rodents in regions where sylvatic plague exists, but these fleas are not nearly so dangerous to man as the domestic rat fleas, *Xenopsylla cheopis*.

Christmas Seal Sale 1938

Thanksgiving Day to Christmas

Tenure of Office for Health Officers*

JOSEPH W. MOUNTIN, M.D., F.A.P.H.A., AND
ELLIOTT H. PENNELL

Senior Surgeon, and Associate Statistician, U. S. Public Health Service, Washington, D. C.

FROM groups concerned with health organization often come assertions to the effect that health officials as a class occupy positions where tenure is insecure and of short duration. If such statements be true and generally applicable, public health administration faces a serious problem. There is little hope of professionalizing a position where constant turn-over is the rule; neither can a community expect effective service from a health department that operates under shifting management. Strange as it may seem, these commonly held notions of instability with respect to tenure of office appear to have developed from limited observations or general impressions; a careful search of the literature failed to disclose any comprehensive analysis of the situation based on the actual employment records of persons who had served in the capacity of health officer. Under the circumstances it seemed appropriate to study in a quantitative way the experience of health officers, using as source material such recorded information as may be available.

The employment records used for this study are taken from the directories † of state, county, and city health officers published annually by the U. S. Public Health Service. Supplemental information in respect to age and professional degrees was taken from directories of physicians published by the American Medical Association, and from lists of members published by the American Public Health Association. In the directories of health officers are enumerated all state health officers, health officers of cities containing 10,000 or more inhabitants, and officers in charge of county health departments. The names of village and township health officers and of county physicians are not included in these publications. Appearance or nonappearance of a name in the directories of health officers is accepted as the criterion of employment. This method introduces some degree of error because of the vagaries of reporting, but the resulting discrepancies do not distort the picture in any appreciable degree. It must be understood that disappearance of a name from the registers does not necessarily signify that the person has abandoned public health as a profession; he may continue to occupy some position other than administrative head of a tax supported health department listed in the specified directories. No doubt a few died in office, but information for correcting the data on this point was not readily avail-

* From Division of Public Health Methods, National Institute of Health. Read before the Health Officers Section of the American Public Health Association at the Sixty-seventh Annual Meeting in Kansas City, Mo., October 25, 1938.

† Periods covered by these directories are: State 1912–1935, city 1916–1935, county 1922–1935. County data for period 1908–1921 taken from *Public Health Bulletin 222*.

TABLE I

Distribution of Health Officers According to Total Full-time Employment Experience and Status at Close of Study (1935)

Employment Status at Close of Study	Total Health Officers	Accumulated Years of Employment	Average Years of Employment
Still employed	793	6,186	7.8
Out of office	1,591	5,730	3.6
Total	2,384	11,916	5.0

able; here too it is believed that the inherent error is of little moment.

Part-time service has been excluded from the more detailed analyses since data on individuals so employed are rather fragmentary; furthermore, progress in public health organization is believed to be more intimately tied up with the fate of full-time employees than of those who regard health administration as a subordinate occupation. It was also deemed advisable to exclude from consideration persons whose names appeared only in the health officer directories for the last year of study. These health officers, though on active duty, had not completed a full year of service; hence their experience was not adapted to the categories used for this analysis.

In the data presented through this report are represented the employment histories of 2,384 full-time health officers who by health jurisdictions are distributed as follows: state 127, city 982, county 967, and 308 who served in more than one type of jurisdiction. The total employment period may be expressed as 11,916 health-officer years, and the average period as 5 years (see Table I). At the close of 1935, the last year of study, 1,591 health officers were no longer in office, while 793 still retained their positions. For the former group the average period of employment was 3.6 years, and for the latter it was 7.8. Among the discontinued group about 50 per cent had completed their experience in 2 years or less, and nearly 75 per cent served less than 5 years (Table II). For the group in office at the close of the study the corresponding percentages were much better, being roughly 12 and 33. In the zone of long-term employment periods the relative performance of the two groups is very similar; about 10 per cent of the group with completed experience served 9 years or more, while 35 per cent of those in office at the close of the study had been there for a similar period. The same material is presented graphically in Figure I by means of the median and interquartile range.

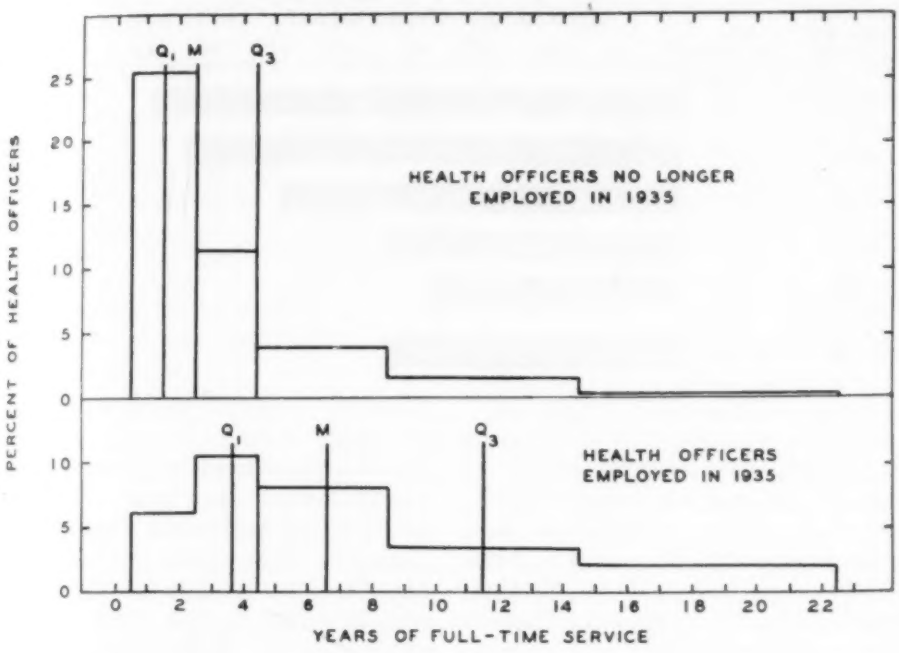
For the group no longer in office at the close of the study the employment period, as expressed by a median, is 2.4, and for those still employed it is 6.7. The configuration of the curves and the range of the middle 50 per

TABLE II

Distribution of Health Officers According to Years of Full-time Service

Years of Service	All Health Officers		Health Officers No Longer Employed		Health Officers Still Employed	
	Number	Per cent	Number	Per cent	Number	Per cent
1– 2	912	38.2	818	51.4	94	11.9
3– 4	533	22.4	364	22.9	169	21.3
5– 8	516	21.6	263	16.5	253	31.9
9–14	288	12.1	126	7.9	162	20.4
15 and over	135	5.7	20	1.3	115	14.5
Total	2,384	100.0	1,591	100.0	793	100.0

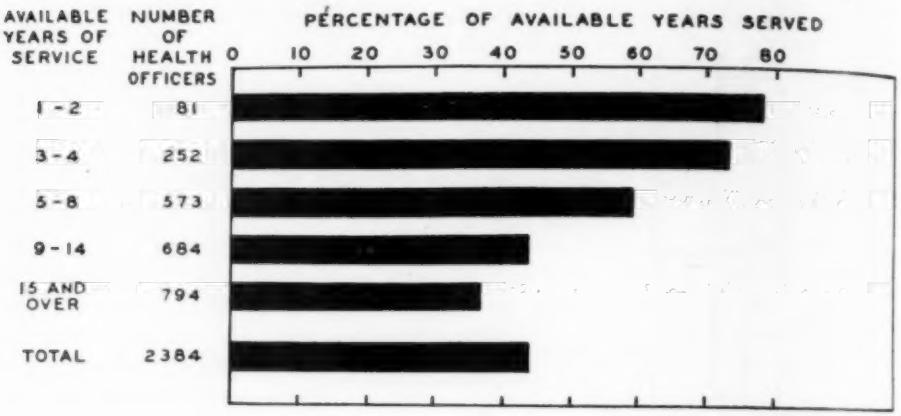
FIGURE I—Distribution of health officers no longer employed and of those employed in 1935 according to years of full-time service



cent also serve to illustrate the differences in employment pattern of the two groups. This behavior suggests a high rate of discontinuance early in the employment history of health officers, while those who weather the elimination process tend to continue as chief administrators for a considerable period of time. There is no way from our basic data of determining the extent to which early separation is voluntary and how much is due to failure of the person to secure reëmployment.

To measure completed service is a rather simple matter since the dates of entrance on duty and of termination of employment are known. On the other hand, there is no basis for predicting how long a person employed at the end of the study period might continue to fill the office. In order that all health administrators may be judged on a comparable basis with respect to their retention of position, a period extending from the date of entrance on duty into the last year of study (1935) was taken to represent the available period of employment. Health officers were then classified on the ratio of their actual years of employment to the total available period. For example, a person who became health officer in 1929 might have continued for 6 years; if he remained 3 years he would have completed only 50 per cent of the available period. Stability of positions expressed as the ratio of actual to available years of service (Table III) is presented graphically in Figure II. Taken together health officers classed as having from 2 to 4 years of available employment served during more than 70 per cent of it; those with from 5 to 8 years of available employment were in office nearly 60 per cent of the period, while the ones that had 9 or more years during which they might be employed actually were reported in office less than

FIGURE II—Distribution of health officers according to available years of full-time service and the proportion of available years served by health officers in the several groups



45 per cent of the available period. It is to be expected, of course, that the proportion of actual to available years of employment should grow less as the period of possible service lengthens. However, the relatively good showing made by the small group who took up full-time work early, clearly demonstrates that discontinuance is not a simple straight line function of length of employment. In this connection it is well to recall the data presented in Table II; there it was shown that there is a tendency for health officers either to drop out of the directories after a short period of service or to continue in the capacity of chief executive over a considerable span of years.

The period of part-time employment was recorded for 311 health officers who also had full-time service. By adding the two periods, the average employment experience of the in-service group having both full- and part-time health officer service would be increased by 67 per cent; and for the discontinued group the corresponding percentage increase would be 80.

From the foregoing data and other points that might readily be adduced it becomes apparent that health officers behave quite differently with respect to their period of employment. This suggests the possibility that some factors common to a significant number of individuals may account for these differences in employment pattern. The information at hand, though fragmentary, covers such points as date of birth, age when first appointed, and professional degrees of the health officer; while relative to place of employment source material pertains to type of health jurisdiction and its geographic location. Even though the findings are not altogether conclusive, there are associations between different circum-

TABLE III

Distribution of Health Officers According to Available Years for Full-time Service and the Proportion of Available Years They Were Actually Employed

Available Years	*Number Health Officers*	*Accumulated Years Available*	*Percentage of Available Years Employed*
All years	2,384	26,687	44.7
1– 2	81	162	78.4
3– 4	252	911	72.9
5– 8	573	3,758	59.5
9–14	684	7,856	44.5
15 and over	794	14,000	37.4

TABLE IV

Median Years and Interquartile Range in Full-time Employment for Health Officers Having Different Characteristics

Characteristics	Total Health Officers	Years of Experience	
		Median	Interquartile Range
All health officers	2,384	3.4	1.6–6.8
With professional degree	1,865	3.4	1.6–6.8
Without professional degree	519	4.1	1.8–7.0
Under 45 years on entrance *	1,009	3.4	1.7–6.4
Over 45 years on entrance *	768	3.9	1.9–7.2
Employed one place	1,953	2.9	1.4–6.0
Employed more than one place	431	6.0	3.7–9.3

* Information on age of health officers was limited to physicians whose ages were listed in American Medical Directory.

stances that appear worthy of presentation. In this connection it should be recalled that full-time service is a relatively new departure in most health jurisdictions. At the close of the study only a small proportion of what promises to be a stable group of officials had completed their employment experience; hence the effect of this group on the mass is obscured when the years of service for health officers in various categories are reduced to a mathematical expression.

While it is true that persons in office at the close of the study period show much better performance with respect to total years of employment and proportion of actual to available years, yet the two groups react quite similarly to the influences on employment that have been selected for study. Because of this circumstance and the necessity for simplicity in presentation, both groups have been combined and their behavior is reviewed from the standpoint of length of employment. This period is expressed by the use of a median and the range of the middle 50 per cent. The factors under consideration are divided into two classes: those listed in Table IV are inherent characteristics of health officers, and those in Table V pertain to the jurisdictions where the health officers are employed.

The health officers whose manner of listing in the directories would indicate special training that led to a professional degree present employment records of duration considerably below those without such attainments; the median for the former group being 3.4 and for the latter 4.1. While the figures are impressive, this difference may have little meaning since difficulty was encountered in classifying training from the information at hand; furthermore there is reason to believe that the directories were both deficient and inconsistent on this point.

Age was studied for its possible effect on length of employment. By using 45 years as the critical point, it was found that those above showed a median period of 3.9 years, and those below, 3.4. This small difference is hardly sufficient to suggest that age is any great factor. The slightly better showing of those in the older group may be due to their having had an opportunity to accumulate more years of full-time service than those who were unable to qualify for positions until recent years. Clearly, persons who accept positions in two or more health jurisdictions are likely to accumulate additional years of employment above those who remain in one place. The median years of employment for the migratory health officers

TABLE V

Median Years and Interquartile Range in Full-time Employment for Health Officers Serving Jurisdictions Having Different Characteristics

Characteristics of Jurisdictions	*Total Health Officers*	*Years of Experience*	
		Median	*Interquartile Range*
Type of jurisdiction			
State	127	4.3	2.4- 8.1
County	967	3.0	1.4- 5.6
City	982	3.0	1.5- 6.5
Combinations	308	6.8	3.8-11.3
Location			
New England, Middle Atlantic	490	3.6	2.0- 8.8
South Atlantic, E. South Central, W. South Central	1,115	3.5	1.5- 6.5
East North Central, West North Central	544	3.4	1.5- 6.5
Mountain, Pacific	235	3.1	1.4- 6.3

is 6.0 and for the stationary ones it is 2.9. Migration, however, is not an outstanding characteristic of health officers as a class since only 431 moved, while 1,953 completed their recorded experience in one place. Most of this limited experience was reported by county health officers.

The region where a health officer is employed seems to exert as much if not more influence on his tenure as do those personal qualities which are discernible from data that describe the group under consideration. In studying the possible effect of circumstances surrounding employment, one finds slight geographic differences. Health officers employed in the Mountain and Pacific areas show a period of employment shorter than is the case for other sections of the country. The median years of employment in the areas used for this study are as follows: New England-Middle Atlantic 3.6; South Atlantic-East South Central-West South Central 3.5; East North Central-West North Central 3.4; Mountain-Pacific 3.1. The difference in performance between the Mountain-Pacific group and the remainder of the country, while of a low order, may be accepted as having some statistical significance.

Health officers of cities and counties show the shortest period of employment with a median of 3.0 years. The position of state health officer is somewhat more stable and represents a median period of 4.3 years, or more than 1 full year above that reported for county and city health officers. Health officers who secure successive employment in more than one type of health jurisdiction lengthen their period of service to a median of 6.8 years. This longer experience is in accord with the observation previously noted that health officers who change their location thereby increase their years of employment.

It is entirely possible that opportunity for accumulating years of full-time service in jurisdictions of one type as contrasted with another may explain differences in periods of employment. The establishment of full-time positions for health officers in a sig-

TABLE VI

Distribution of Health Officers According to Period of Full-time Service and Type of Health Jurisdiction

Years of Service	All Health Officers		State		County		City		Mixed Jurisdictions	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
1- 2	912	38.2	33	26.0	415	42.9	426	43.4	38	12.3
3- 4	533	22.4	34	26.7	230	23.8	209	21.3	60	19.5
5- 8	516	21.6	32	25.2	229	23.7	159	16.2	96	31.2
9-14	288	12.1	17	13.4	73	7.5	117	11.9	81	26.3
15 and over	135	5.7	11	8.7	20	2.1	71	7.2	33	10.7
Total	2,384	100.0	127	100.0	967	100.0	982	100.0	308	100.0

nificant proportion of counties is a rather recent innovation: cities seem to have been slow in changing from part- to full-time service, while the position of state health officer has in most instances been on a full-time basis for a number of years.

When health officers in jurisdictions of different governmental types are distributed according to years of employment (Table VI), one finds an unusually high proportion of city and county incumbents that served 1 or 2 years. If appraised on this criterion, state health officers do much better: yet one-fourth of them fail to serve more than 2 years. On using 5 years as a critical point it was found that the percentages of health officers by type of jurisdiction who served 5 years or more are as follows: states 47, counties 33, cities 35. Only 12 per cent of the health officers who shift from one type of jurisdiction to another serve less than 3 years, while 68 per cent serve more than 4 years.

Within their respective categories health jurisdictions behave differently in the security accorded to those who occupy the position of health officer. In some places there is little turn-over among the incumbents, while in others a change of health officers is made every few years. An analysis of the behavior of jurisdictions as expressed by their employment policy is not within the scope of this paper. Data in our possession, however, show very clearly that jurisdictions are essentially individualistic in this respect. It would seem that traditions of government, coupled perhaps with chance, influence the treatment of health officers much more than any clear-cut employment policy.

SUMMARY

Data presented in the foregoing article substantiate in considerable measure the prevailing impression that full-time health officers as a class pursue this type of work for relatively short periods of time. A generalization which expresses average experience, however, cannot be applied to all health officers. There is an unstable group constituting about 40 per cent of the total who are discontinued as full-time employees within 2 years from their first listing in the directories. After this critical period is passed the performance of those who remain is very much better. Particularly significant is the point that nearly 40 per cent of health officers had 5 or more years of full-time service while 18 per cent remained in office for 9 years or more. A very large proportion of the longer term health officers were on duty at the close of the study period, hence have the opportunity for improving still further their employment record.

Longer periods of service are reported for health officers who accept positions in two or more jurisdictions than for those who complete their experience where first employed. Neither personal factors such as age and technical training, nor geographic location of the health jurisdiction seemed to affect in any great measure the period of employment. State health officers presented somewhat better records than did those of other jurisdictions, but this performance is probably due to the fact that states preceded both cities and counties in establishing a high proportion of full-time positions.

Taken as a whole the outlook for reasonable tenure of position for full-time health officers is not all that may be desired; yet the situation is much better than it is commonly alleged to be.

Population Growth—Its Vital Statistics and Public Health Aspects*

WARREN S. THOMPSON
Scripps Foundation, Miami University, Oxford, Ohio

THE facts regarding the present growth of population in the United States are too well known to this group to need much elaboration here. The birth rate has been declining for a number of decades, but as long as the death rate declined almost as fast—in fact at times even faster—the slackening of the birth rate did not attract a great deal of attention because the rate of natural increase was not greatly affected. Then, too, except for relatively short periods at different times, the large inflow of the foreign born added materially to our increase decade by decade, both because of the net gain through immigration itself and because of the relatively high birth rates of these foreign born. Furthermore, it is not unlikely that the very size of our decennial increase in numbers since 1900—13 to 17 millions—led us to overlook the fact that the rate of natural increase was declining rather rapidly.

In any event, within a little more than a decade there has been a marked enhancement of interest in the natural increase of our population and a growing realization that changes of far-reaching significance are taking place. It is common knowledge today that even though there is still a considerable excess of births over deaths (800,000 to 900,000) each year, this excess persists only by virtue of the favorable age composition which is a heritage of the large natural increase of the not distant past. Because we had an increasing number of births each year until 1921–1925, we will have more persons in the child-bearing ages for some years yet than we had in the past, so that even with declining specific rates the total number of births will remain higher than the number of deaths for perhaps two decades. This same age make-up is also favorable to a low death rate and a relatively small total number of deaths. When, however, this favorable age make-up has passed, the crude birth rate will decline significantly even though specific birth rates should remain as they now are, and crude death rates will rise until they approach or even surpass those of a life table population. With specific rates for both births and deaths as they are now, we will have an actual excess of deaths over births and a declining population within about three decades. Further decline in specific birth rates will, of course, hasten the approach of the time when deaths will exceed births.

* Read before the Vital Statistics Section of the American Public Health Association at the Sixty-seventh Annual Meeting in Kansas City, Mo., October 28, 1938.

It is to be expected that death rates will decline somewhat in the future; but even if the expectation of life should rise to 70 years, which is 8 or 9 years higher than it now is, the death rate of a life table population would be 14.3 per 1,000, which is about 30 per cent above the present crude rate and only about one-sixth below the present crude birth rate.

From the standpoint of our interest here, it is the age changes which are taking place as our population growth declines that are of primary importance. The Scripps Foundation has calculated what our future age composition will be, if specific birth rates and death rates decline certain given amounts in the future, and if there is no appreciable immigration. It will not be possible here to do more than cite the main changes which would take place on the basis of what we regard as the most probable movements in vital rates.

The one thing that is reasonably certain is that the age changes indicated will not be exactly realized. On the other hand, it seems reasonably certain that the proportions of the population actually in the different age groups will not depart so greatly from these calculations that general conclusions derived from them will be useless.

In 1930 the persons under 20 constituted 39.2 per cent of our total population; by 1960, only 22 years hence, they will make up only 29.3 per cent. This is a decline of almost one-fourth. The group in the childbearing ages (20–44), on the other hand, will change but little during this period—from 38.1 per cent in 1930 to 37.4 per cent in 1960. The proportion at the ages 35–44 will, however, increase while that of the younger ages, when women are most fertile, will decrease. Thus the 35–44 group will increase from 13.9 per cent of the total population in 1930 to 15.4 per cent in 1960, while those 20–29 will decrease from 16.8 per cent in 1930 to 14.3 per cent in 1960. This change in the age of the childbearing population is even more striking if we consider only the women 20–44. In 1930 the women 20–29 constituted 44.8 per cent of all women 20–44, but by 1960 they will constitute only 38.0 per cent of this group. On the other hand, the women 35–44 will increase from 35.7 per cent in 1930 to 41.5 per cent in 1960. Clearly, with the same specific birth rates in 1960 as in 1930, there will be a marked decline in the crude birth rates. There will also be a marked decline in the total number of births. This is the most important effect of the foreseeable changes in the age make-up of the group 20–44.

The increase in the proportion of the population at ages over 45 is of special interest because of its effects on the general death rate and because of the changes in public health work needed to adapt it to serve these older groups adequately. In 1930, the middle-aged—45 to 64—constituted 17.4 per cent of our people; in 1960 they will make up 23.3 per cent. The numerical increase in this age group between 1930 and 1960 will be about three-fifths while the total population will increase by only one-fifth. It is in the group 65 and over, however, that the most striking increase will take place. In 1930 this group constituted only 5.4 per cent of our total population, but in 1960 it will constitute 10.0 per cent. In actual numbers it will increase from about 6.5 millions to about 14.5 millions.

It would indeed be carrying coals to Newcastle to dwell at any length upon the effects of such age changes on the general death rate. Only a very great drop in the death rates at the older ages can prevent a rise of 40 per cent or more in the present crude rate, *i.e.*, a rise from the present rate of about 11 to 15 or 16 as our actual age com-

position approaches that of a life table population.*

Perhaps it will assist us to appreciate the public health problems involved in attempting to keep the general death rate from rising more than 25 or 30 per cent above the present level if we will study the changes in the expectation of life as shown in the life tables of some of the more progressive countries during the last century. These life tables without exception show a large and gratifying rise in the expectation of life at time of birth. In the United States, we can get a pretty good notion of the changes in the expectation of life in the period since 1789 if we use the life tables for Massachusetts.

In 1789 in Massachusetts a new-born boy had an expectation of life of 34.5 years. This rose rather slowly for about a century, and in 1890 was 42.5 years. From then on it rose rapidly and in 1930 was about 59 years. At age 20, on the other hand, the increase in expectation of life during this 140 year period was only about 11 or 12 years, and most of this apparently took place before 1890, although since 1900 about 4 years have been added to the expectation of life of males aged 20. This may be compared with the 12 or 13 years that have been added to that of new-born boys since the latter date. At age 40 the expectation of life of males has changed only from 25.2 years in 1789 to 29.0 in 1930—a gain of only a little over 3 years. At age 60 there has not only been no gain, but there has actually been a slight decrease—from 14.8 to 14.3.

In England and Wales there has been much the same change although the period for which data are available is not so long. In 1838–1854 the expectation of life of boys at birth was 39.9 and this rose to 58.7 in 1930–1932. At age 20 the figures are 39.5 and 46.8 respectively; at age 40 they are 26.1 and 29.6, and at age 60 they are 13.5 and 14.4.

In the Scandinavian countries, the pattern of change is the same as in the United States and England, but at the older ages, the expectation of life has improved more than in most other lands—for example, in Sweden it rose from 12.1 years for males at age 60 in 1816–1840 to 16.5 years in 1926–1930.

In New Zealand, where the expectation of life is the highest of any country in the world, the increase for males between 1896–1903 and 1931 was 10.6 years at birth but only 1.3 years at age 60. Thus it appears that there has been only a relatively small increase in the expectation of life at ages of 40 and over even when we can go back a century or more, while there has been a very large increase at birth and up to age 20.

These facts show beyond doubt that all the great advances in medicine and in public health work during the last century have had but small effect in prolonging the life of the mature adult. They have, however, done much for the new-born infant and for young children.

It is possible that the very success of health work in saving the lives of infants and children is one of the reasons it has not accomplished more for the adult. It may be that the survivors to adulthood today are not, on the average, as tough, not as resistant to organic ailments, as the survivors in a population having more rigorous selection at the younger ages. So far as

* It should be pointed out that the only figure of much doubt in the above calculations is that for persons under 20. These persons are not yet born and the birth rates used in calculating their numbers may vary more or less from those actually realized. I may say that the birth rates used here seem likely to give a larger number of births than the actual rather than the reverse. As for the other ages, all persons who will be over 22 in 1960 are already born. There may be large fluctuations in the death rates from which survivors are calculated, but since this is not very likely, we can be reasonably sure of the numbers at these ages. The proportions at the different ages would of course be affected by a larger or smaller number of births than that calculated.

I can see there is no means of testing the validity of such a hypothesis because one cannot tell who among those now 40 or over would have survived under the health conditions prevailing a century ago. However, the most important reason for the failure to effect any considerable increase in the expectation of life of the mature adult undoubtedly lies in the difference in the nature of the ailments to which children and adults are subject. Children are subject to germ diseases rather than to organic diseases. Their organs have not had time to go astray or to fail in their proper functioning, but the introduction of alien organisms—germs—catches their bodies unaware, so to speak, and easily overcomes their feeble resistance. Hence the development of sanitary living conditions and the protection against a few of the more virulent germ diseases have wrought wonders in reducing infant and child mortality.

But these measures do not suffice to prolong to anything like the same extent the lives of those who have survived childhood. The body apparently builds up a certain amount of resistance to these germ diseases if it survives their early attacks, but this does not in any way insure against the wearing out of our vital organs. There is a limit beyond which our bodies cannot be kept in good working order. There is little reason to think that we have already reached this limit in the United States since in New Zealand and in Sweden the expectation of life at age 40 was about 3 years greater in 1931 than it was in the United States, and at age 60 was about 1.5 years greater.

Due to the differences in the types of diseases which cause death among infants and children and older people, the improvement of the expectation of life among the latter will probably be much more difficult. The category of diseases labeled infectious and parasitic cause, about one-sixth of all the deaths of children under 5 years of age but only about one-twenty-fourth of the deaths in the slightly smaller group of persons 60 and over. On the other hand, cancers and other tumors are negligible as causes of death among children under 5, but account for nearly 13 per cent of all deaths among people over 60. Diseases of the circulatory system are also of small moment among children but cause almost 40 per cent of all deaths at over 60 years of age. Diseases of the nervous system also take a heavy toll among old people but are of little moment among children. Diseases of the respiratory system and of the digestive system take a heavy toll among both young and old but especially among the young.

This very brief statement shows clearly that in general the diseases which account for a large part of the deaths among the older people are those arising from or associated with the wearing out of the vital organs. In the very nature of the case these diseases have no such uniform and simple causes as have typhoid, diphtheria, enteritis, measles, etc. Sanitation, care to avoid exposure, and antitoxin inoculation will not ward off many of the diseases of later middle age and old age. Their causes are far more complicated than the causes of diseases which claim the lives of infants and children. Also they are probably highly individual so that treatment that will prevent heart ailment in one person may not prevent it in another. Then, too, social conditions very difficult of amelioration probably more often lie at the root of organic diseases than of the more acute infectious diseases. Thus the conditions of one's living and of one's work, which are very intimately bound up with the entire social and economic structure, may be the underlying causes of the breakdown of the heart, the kidneys, the liver, or the develop-

ment of nervous troubles rather than any specific bodily condition or infection. It is very difficult, indeed it is almost impossible in most cases, to establish any demonstrable nexus between the immediate cause of death and the conditions of life which may have induced this particular ailment. Furthermore, even when it is known that a particular organic disease is likely to result from a given manner of life, this knowledge does not throw any significant light on how to apply effective means of prevention in this and similar cases since it may be quite impossible for the victim to comply with the conditions essential to his health because of economic or social conditions over which neither he nor his physician has any appreciable control.

Only a much more extended community control over economic and social conditions than we now have, coupled with an enlarged and more adequately organized public health service, can make available to everyone the full benefits of our growing medical knowledge. But since these organic ailments do not seem to endanger the entire community like a contaminated water supply or the spread of smallpox and diphtheria, they are not now generally considered matters of public concern except by a small minority of those practising medicine and a few persons whose work leads them to appreciate the difficulties the average person has in securing adequate health service. I venture to predict, however, that there will be a very rapid extension of public health work within the next two or three decades and that the diseases of later middle life and old age will receive a much larger share of attention in the future than in the past. But we should not expect too much in the way of prolonged life from better health service. The human organism has its limits and must wear out. What we may expect is that life will be made more comfortable and more pleasant for older people by keeping them in reasonably good health until near the end of life.

By way of summary I would again call attention to two points which stand out clearly from a study of present-day death rates and the trends in mortality: (a) there is need of a greater concentration on the study of organic diseases in the medical schools and research organizations than in the past, and (b) it seems highly probable that medical men will have to join forces with sociologists, economists, and the government much more than in the past if they are to search out all the causes of the ailments of adults and find the means for their prevention and cure —for example, even more than in the prevention of infectious diseases, it may be necessary to exercise control over the general conditions of life if organic ailments are to be prevented from taking an unnecessary toll.

As officials interested in public health work, you have never believed that health was solely or even primarily a private matter which could be left to physician and patient. You are fully aware that securing a sanitary water supply is quite beyond the means of an individual in any densely settled community. Just so it seems that taking care of organic troubles is very frequently beyond the power of physician and patient alone. The community must provide the social and economic conditions in which physician and patient can coöperate effectively. In other words, public health organization must be extended into new fields to bring the full benefits of medical discovery into play for our aging population, just as it was necessary to create an effective public health service in the past century to apply the knowledge of medicine and sanitation which had been accumulating but which could not become effective in reducing human misery

until it was organized by the community. If such an extension of public health service as is envisaged here is objected to on the ground that it encroaches on the freedom of medical practice and the right of the individual to determine what he will do with his own health, the answer is that long ago the community determined that no one had a right to spread smallpox or diphtheria or certain other diseases; indeed in some communities one has no right to have these diseases at all but must be immunized against them. Today we are on the verge of saying, as they have already done in Sweden, that no one has a right to have venereal disease and certainly no one has a right to marry and have children as long as there is danger of transmission. Tomorrow we may come to prize more highly the right to proper medical examination and diagnosis looking to the prevention and early cure of organic ailments than the right to have circulatory troubles, nephritis, or diabetes if we want to.

If the extension of public health service to the point where everyone has adequate health service curtails freedom in certain respects it will, on the other hand, create a far more valuable freedom, namely, the freedom from crippling and lethal organic ailments in an increasing portion of our population, and this surely is a consummation devoutly to be wished for.

Every great advance in human welfare has been regarded as revolutionary by those whose interests were adversely affected, but once the step has been taken and the benefit realized, future generations wonder why their forebears were so stupid as not to have done it sooner. So it will be with the extension of public health service and the economic changes necessary to make advancing medical knowledge fully effective for human welfare. But such an extension of health service will come and it will be organized to care for the older part of our population much more adequately than in the past.

Practical Experience with the Scharer Rapid Field Test for Pasteurization*

D. M. ROGER
Borden's Farm Products, New York, N. Y.

THE efforts expended by workers in Public Health and commercial dairy laboratories in the control of the pasteurization of dairy products together with recent improvements in equipment and effective Board of Health regulations have considerably increased the efficiency of pasteurization. Unfortunately frailties, human and mechanical, still exist causing the slight inefficiencies in pasteurization that would be almost impossible to detect had the phosphatase test not been developed.

As is generally known by workers in this field, the enzyme phosphatase which is present in mixed supplies of cows' milk, has the ability to hydrolize disodium phenyl phosphate liberating free phenol, a quantitative determination of the phenol liberated being a measure of the activity of the enzyme. When milk is held at pasteurizing temperatures phosphatase is almost completely inactivated by the end of the holding period. It has been demonstrated by Kay and Graham [3] and others [2-7] that a measurement of the phosphatase activity of pasteurized milk is an index of the efficiency of pasteurization.

Gilcreas and Davis [2] in their investigation of the Kay and Graham test not only demonstrated the value of the test but also awoke a nation-wide interest in the subject. While the Kay and Graham method is suitable for use in a well equipped laboratory it does not lend itself to routine plant control and field work.

The ideal test for plant control must embody simplicity, rapidity, and reasonable accuracy. For plant control it is not necessary to measure the exact degree of under-pasteurization—it is sufficient to know if a sample will or will not pass as being efficiently pasteurized.

Fortunately for those of us employed in the control of pasteurization plants, Scharer [4] of the New York City Department of Health has developed two modifications of the Kay and Graham test, one for laboratory work involving an incubation period of 1 hour and the other a rapid field test requiring only 10 minutes' incubation. The reagents for this rapid test may be made up according to directions given by Scharer [5] or they may be purchased on the market in tablet form, which is very convenient for control and field work.

EXPERIENCE WITH THE TEST IN PLANT CONTROL

About a year ago it became evident that the best method of controlling pasteurization by means of the phosphatase test was to equip each plant so that the milk could be tested at

* Read at a Joint Session of the Laboratory, Public Health Engineering and Food and Nutrition Sections of the American Public Health Association at the Sixty-seventh Annual Meeting in Kansas City, Mo., October 28, 1938.

regular intervals during the run. The Scharer Field Test filled most of the requirements previously mentioned and preliminary tests indicated that it would detect at least 0.5 per cent added raw mixed milk. Knowing that this test was new and not fully tried out we installed it in 14 pasteurizing plants and awaited further developments. During the past year, in these plants and the laboratory, we have performed more than 18,000 tests by this method or a slight modification of it. While these findings have not the same value that tests on samples pasteurized under laboratory conditions would, certain observations may be made:

1. No cases were encountered where interfering substances in the milk itself gave false positive tests.

2. Duplicate tests checked accurately where reasonable care was observed.

3. It has been possible to detect the addition of 0.1 per cent of raw mixed milk to milk pasteurized commercially at 143° F. Such tests were made frequently to check the reagents. (In plant work we have always used a 30 minute incubation period for the test.)

4. When samples from these plants were run side by side in the laboratory and one or two plants consistently gave higher readings than the others it seemed safe to assume that unless there were interfering substances in the milk, this was an indication of some fault in the pasteurizing process rather than an error in the test. Follow-up inspections of these plants have usually revealed the reason for these higher tests, but the intermittent occurrence of only slightly abnormal tests is not so easily explained, but if these intermittent tests are confined to one plant it is again safe to assume that the pasteurizing is at fault and not the test.

5. If accurate work is to be done the precautions given by Scharer[5] regarding the storage, preparation and checking of the reagents must be strictly adhered to.

SOME CAUSES OF FALSE AND ERRATIC TESTS ENCOUNTERED

Scharer has listed certain causes for false tests in his article.[5]

The most common causes of false positive tests that we encountered were:

1. The equipment used for sampling had been contaminated with raw milk.

2. The tablets used for preparing the test solutions were too old or had not been kept under refrigeration.

3. The test equipment had not been properly cleaned.

Some less common causes were:

1. One case was found where someone had dipped a pipette contaminated with raw milk, into the bottle of distilled water used for making up the substrate.

2. Some reagent bottle closures have been encountered that liberated phenol.

3. In another case someone had contaminated the distilled water, with sulphuric acid from a storage battery hydrometer. While this did not cause a positive test it did interfere by retarding the development of the indophenol blue.

Some causes of erratic tests:

1. Insufficient mixing of the milk with the substrate at the start of the test.

2. Insufficient shaking after the B. Q. C. indicator has been added.

3. Not waiting full 5 minutes after the B. Q. C. indicator has been added.

4. Insufficient shaking when extracting with the butyl alcohol.

Most of the work that we have done has involved the use of amyl alcohol* (boiling range 126—132° C.) as a solvent in place of normal butyl alcohol. While the amyl alcohol does not extract quite so much of the indophenol blue it has the advantage of not extracting so much of the yellow color from high color milk and cream. This yellow color does interfere with tests on slightly under-pasteurized products. However, for most practical purposes butyl alcohol is satisfactory.

Since many of our plant testers work by artificial light it is important to develop a distinct color contrast between a pasteurized milk test and a test on a sample that is slightly under-pasteur-

* Different color standards are required when amyl alcohol is used.

ized. To accomplish this we have equipped our plants with small water bath incubators and have increased the time of incubation from 10 to 30 minutes. Table I indicates the color gain achieved by this increased incubation.

TABLE I

Holding Time and Temperature		Incubation	
Minutes	Degrees F.	10 Minutes	30 Minutes
25	142	B	B
30	142	5+	5++
35	142	2+	5+
25	143	2+	5+
30	143	2—	2—
35	143	2—	2—

The color standards used are those described by Scharer.[5] Normal butyl alcohol was used for extraction.

B indicates that a blue color was easily detected without extraction. (With experience one is able to pick out even smaller discrepancies without the alcoholic extraction.)

It will be noted in Table I that, fortunately, pasteurized samples show little increase in color due to increased incubation but slightly under-pasteurized samples show considerable gain.

Table II shows the results of tests on some samples of "B" Raw milk pasteurized under laboratory conditions.

TABLE II

Time of Holding	Temperature of Holding ±0.2° F.				
Minutes	141°F.	142°F.	143°F.	144°F.	145°F.
20	B	B	B	5	2— —
25	B	B	5+	2	2— —
30	B	5++	2—	2 —	2— —
35	B	5+	2—	2 — —	2— —
40	B	5	2— —	2 — —	2— —

These samples were incubated 30 minutes at 37° C. The same color standards were used as in Table I. Normal butyl alcohol was used for extraction.

Table III indicates that there is little or no benefit to be gained by incubating 30 minutes at 47°C. instead of 37°C. In our plant control work we incubate our samples in small insulated water baths which are filled with water at 44°C. at the end of 30 minutes the temperature is still above 37°C. Table III indicates that this range of temperature should not interfere with the test.

TABLE III

A Comparison of Duplicate Tests Incubated at 37° and 47° C. for 30 Minutes

	Reading After 30 Mins. Incubation			
	At 37° C.		At 47° C.	
Sample				
1	2	2	2	2
2	2—	2—	2—	2—
3	5	5	5	5
4	5+	5+	5+	5+
5	2	2	2+	2+

Normal butyl alcohol was used for extraction and Scharer[5] color standards were used to obtain the readings in this table.

SUMMARY

A year's experience with the Scharer Rapid Field Test has shown that this method is simple, and when performed with care its accuracy closely approaches that of the longer laboratory tests.

A 30 minute incubation period was found to aid in the detection of slightly under-pasteurized samples.

When this test is used as a routine control the milk and cream can be checked before leaving the plant.

REFERENCES

1. Gibbs, H. D. Phenol Tests III. The Indophenol Test. *J. Biol. Chem.*, 72:649, 1927.

2. Gilcreas, F. W., and Davis, W. S. The Practical Value of the Phosphatase Test in Determining the Efficiency of Pasteurization. *Ann. Proc. I.A.M.D.*, 34–56, 1937.

3. Kay, H. D., and Graham, W. B. The Phosphatase Test for Pasteurized Milk. *J. Dairy Res.*, 6, 191–203, 1935.

4. Scharer, H. A Rapid Phosphomonesterase Test for Control of Dairy Pasteurization. *J. Dairy Sci.*, XXI, 1:21–34, 1938.

5. Scharer, H. Improvements in the Rapid Phosphatase Test for the Detection of Improper Pasteurization of Milk and Its Products. *J. Milk Tech.*, 1, 3:35–38, 1938.

6. Storrs, A. B., and Burgwald, L. H. The Phosphatase Test. *J. Milk Tech.*, 1, 2:18–35, 1938.

7. Tracy, P. H., and Hahn, A. J. Determining the Efficiency of Milk Pasteurization. *Ann. Proc. I.A.M.D.* Lab. Section, 57–71, 1937.

Health Maintenance in Industry*

CLARENCE D. SELBY, M.D., F.A.P.H.A.
Medical Consultant, General Motors Corporation, Detroit, Mich.

THE workman in industry is employed about 25 per cent of his time. It is only in this respect and to that extent that his life differs from that which is common to his community and the position he occupies in it. The causes of sickness and injury may originate at any time during the 24 hour cycle of each day. Some are definitely occupational, some are definitely non-occupational, and in some, the origin may be doubtful.

The definitely occupational are responsible for about 6 per cent of the workman's total annual disability from sickness and injury. In other words, 25 per cent of his time, or his occupation, accounts for only 6 per cent of his annual disablement. This clearly places the major problem of maintaining employee health in the employee himself and his community rather than in the plant, and it immediately brings up the question—What can the plant physician do about it?

He can do this. He already has a well organized health maintenance program which experience is proving to be effective in so far as the occupational disablements are concerned. He can extend this program to include studies of non-occupational sickness. He can act as a case finding agency for the local private physicians who care for the workman, and he can act as an aid to the local health officer.

It is doubtless unnecessary to discuss the plant physician's health maintenance program which is now fairly well established and rather well known, but as a basis for consideration of these newer responsibilities, it should at least be outlined.

OCCUPATIONAL DISABLEMENTS

The treatment of industrial injuries and occupational diseases is assumed in any industrial medical program. Every well organized plant medical service has ample provisions for that. It can be said, however, that the modern plant physician is coming to depend more and more upon specialists for services of that nature. He is himself a specialist in a field which is gradually merging into preventive medicine, and he recognizes the value of specialized attention in the treatment of injuries and uses it.

Unfortunately this is the only service that the employees of about 85 per cent of the industrial establishments of the United States receive and it involves about 60 per cent of the employed population. To render adequate service, comparable with the best practices of industrial medicine, to this group, is a problem of the private practitioner in medicine who serves industry on-call or on a part-time basis, and its solution lies in their training for industrial practice.

In connection with the handling of the occupational disabilities, the plant doctor is occasionally faced with the necessity of passing upon the validity

* Read before the Industrial Hygiene Section of the American Public Health Association at the Sixty-seventh Annual Meeting in Kansas City, Mo., October 25, 1938.

of claims for compensation. His decisions, whether large or small amounts are involved, are always important because of their possible influence upon employee relations. He must not, however, be influenced by this fact or by the fact that he is employed by the management. A partisan plant doctor cannot for long hold the confidence of either management or the employee group.

The treatment of occupational disabilities is still a major function of industrial medicine, and in many places it is the dominant function. If partisanship is pursued to the point where the doctor becomes known for his bias, he is seldom competent to protect either his company or the health of the workmen. An effective health maintenance program in particular is built up on confidence. The plant physician is always on sound ground when he gives his employee patients the consideration he would if they were private patients, and in this all they ask is that he be fair.

With the exception of the treatment of occupational disabilities, all functions of industrial medicine point up toward health maintenance. A logical beginning is in studies of the working environment.

ENVIRONMENT

Theoretically a physician is able to determine the effects of environment upon health, but practically only those can do so who are familiar with the plants in which they serve, and then only by studies of the various operations and workroom environments, by special examinations of the workmen, and the coördination of all findings. This is a task of magnitude, especially with regard to studies out in the plant.

To assist him in these, the doctor now has a valuable ally in the industrial hygienist. Ability to interpret his findings is essential and capacity to obtain corrective measures is desirable. Otherwise the doctor may fail in the correlation of physical findings in the employees with conditions in the plant and the correction of conditions that prove to be harmful. Industrial hygiene properly belongs in the medical department.

SAFE PLACEMENT

Having become familiar with working environments and conditions, the doctor is able to advise in the safe placement of new workmen. In order that new workmen may be assigned to occupations for which they are suited and can safely perform, a knowledge of their physical conditions is necessary. To obtain this knowledge is the purpose of the preëmployment examination. Certainly it must be sufficiently thorough to enable the doctor to advise intelligently as to placement. As this is only the beginning of the workman's plant life, the examination must also serve as a source of information to guide the doctor in his subsequent efforts in behalf of the workman's health and his continuing safe employment.

The examination should be a reasonably complete physical study, supplemented by roentgenograms of the lungs and such other procedures and tests as the doctor considers to be essential. This examination is the doctor's introduction to the workman. If he impresses him as being an able physician, honestly interested in employee health, he has gone far toward building up the employee's confidence and good will, which are so necessary to health maintenance. A doctor cannot well serve an employee who has little or no confidence in him.

PHYSICAL SUPERVISION

Important though it is, the preemployment examination must always be considered as a preliminary in the plant physician's subsequent physical

supervision of the employee. It brings out information which he needs for comparison with the findings obtained by periodical examinations.

These periodical examinations are to secure early diagnosis of preventable diseases and adjustments in occupation if necessary. They are essential to the control of occupational diseases. They should be as complete as the doctor requires for a conclusion, and they should be made often enough to give the workman health protection, but not less frequently than annually.

A workman being transferred from one department to another should receive such examinations as may be necessary to safe placement in the department to which he is being transferred.

Reëntrance examinations should be made after absence from illness or injury. They are to protect workmen against a too early return to usual work or to effect changes in occupation if indicated. These need not be more extensive than in the judgment of the physician is required to safeguard the workman and the employer.

It is only natural that the workmen consult the doctor from time to time about personal matters and, although he will not attempt to treat them, for that properly belongs in the field of private practice, he will take advantage of the opportunity to consult and advise. In order to do this, it is essential that an examination be made. This examination is such as any doctor might make for diagnosis and counsel.

HEALTH INSTRUCTION

The best of health instruction is that which follows physical examinations or accompanies consultations. This is personalized instruction and as such is very effective. Every visit of every employee to the medical department, and these frequently equal 100 per cent of the total number of the employees monthly, makes an opportunity for health instruction.

RECORDS

These should show the results of all physical examinations and consultations and will include particularly detailed reports on injuries and illness, descriptions of physical findings, treatments, estimated periods of disability, end results, and all other information pertinent to cases or required by statute for Workmen's Compensation claims or other purposes. In short, records should be sufficiently complete to permit the making of statistical studies.

CASE FINDING

In the course of preëmployment and periodical examinations and in connection with consultations, the physician will discover conditions that require treatment. This case finding function of industrial medicine has far reaching consequences in the field of health maintenance. It is very apt to uncover and encourage treatment of a great variety of pathological conditions and diseases which, under ordinary circumstances, will not receive attention until farther advanced.

Needless to say, employees found to be suffering with correctable conditions are referred to their family physicians. This phase of industrial medicine serves as an important agency for the general profession and the public health authorities. This is particularly true with reference to tuberculosis, syphilis, the cardiorenal diseases, vascular diseases, and many others which need not be mentioned.

STUDIES OF SICKNESS

It is seen from the foregoing that the plant physician has a splendid opportunity to accumulate data relative to the instance of non-occupational sickness and injuries as well as the occupational. Although not a responsi-

bility of industry, their prevention and control is preëminently desirable. As a means toward this end, the plant physician collects and analyzes statistics concerning sickness relating to occupation, sex, age, and other facts that may involve, or be involved, in the health of the workmen.

At the moment, industry, generally speaking, has little or no knowledge of the losses which accrue to the employees because of non-occupational sickness nor have they any knowledge as to the losses which accrue to industry. Statistical studies will divulge this knowledge, will enable industry to contribute its share toward a disease prevention program, and will serve as a basis for the definition of the responsibility of the general medical profession, public health authorities, and the community, in relation to employee health.

COÖPERATION WITH THE MEDICAL PROFESSION

By this time it has become apparent that the plant physician is dependent, to a large degree, upon the local medical profession, and that the local profession is, in reality, an element in the plant medical service. It is desirable, therefore, that the industrial physician make it clear to the local profession that although he is in a sense an uninvited consultant, he is at the same time a very valuable ally. He should attend medical meetings, mingle with the local hospital groups, and take a place in local medical circles appropriate to the position which he occupies and commensurate with his opportunities for service, not only to industry but to the community itself. He must never assume the rôle of the private physician.

COÖPERATION WITH OFFICIAL AND NON-OFFICIAL AGENCIES

Industrial medicine is coming to realize more than ever before its opportunities for service in the public health field. It is the only organized point for attack against the preventable diseases in the employed group, which is, in reality, a definite age group. Industrial medicine may serve in the public health field for this group in a manner much as has already been done in relation to infants, children, and adolescents. This opportunity becomes increasingly evident as the control programs for tuberculosis and syphilis develop.

Plant studies of non-occupational sickness are obviously supplemental to the community studies of sickness, the so-called vital statistics, and epidemiological studies in the plants, a brilliant conception of J. J. Bloomfield, have the same import with respect to the health of the employed group as epidemiological studies of the community itself.

Details as to methods for coöperation with municipal and state health departments and nonofficial agencies are not needed. All physicians are familiar with the routines. It should, however, be made clear to these departments and agencies that in industry is a valuable ally in promotion of community health.

CONCLUSIONS

By virtue of his place in industry, his responsibilities, facilities, and contacts, the industrial physician is able to contribute substantially to the health of his community, and in so doing is able to further very considerably his own health maintenance program. In addition to the now accepted procedures of environmental plant studies, preëmployment and periodic examinations, consultations, and health instructions, he sees even greater possibilities in extensions into the broad field of public health by statistical studies of non-occupational sicknesses in the employed population, epidemiological studies of those groups that show a high incidence of disease, and a well coördinated plan of coöperation with medical and public health agencies.

American Journal of Public Health
and THE NATION'S HEALTH
Official Monthly Publication of the American Public Health Association
Volume 28 November, 1938 Number 11

MAZŸCK P. RAVENEL, M.D., *Editor* AUGUSTA JAY, *Editorial Associate*
REGINALD M. ATWATER, M.D., *Managing Editor*

Editorial Board
THE MANAGING EDITOR, *Chairman*
PROF. IRA V. HISCOCK
KENNETH F. MAXCY, M.D.
ARTHUR P. MILLER, C.E.
HARRY S. MUSTARD, M.D.

PATENT MEDICINES AND ADVERTISERS

THE nostrum evil flourishes in most parts of the world. The Scandinavian countries, Czechoslovakia, Switzerland, and a few others are better protected in this regard than the United States, Great Britain, France, and many South American countries.

The fight against patent medicines has been a long and sickening one in this country, and only recently have we succeeded in getting a law passed which has raised expectations for better things. It is too much to hope that the fight is over and that the victory is complete or permanent.

Reports from England indicate that the trade in quack medicines has been growing enormously, so much so that Lord Horder has been led to take up the matter in the House of Lords. He has pointed out in a masterly way the evils of the business and the inconsistency of allowing it to grow and flourish at a time when the government is making nation-wide efforts to improve the national fitness. It is stated that in England the patent medicine trade takes from the public between 125 and 150 million dollars a year, which is about the same amount as spent on hospital services. This money comes largely from that part of the public which can least afford it. Where the government spends $500 for health for the public, the patent medicine industry pays $5,000 to make them disease conscious. For the medicines recommended for nervous and digestive disorders alone approximately 5 million dollars will be spent in advertisements during the coming year. Lord Horder pointed out that when he proposed to take up the fight against the patent medicine evil he was warned that he would arouse against him the great advertising interests and would have to fight the proprietors of the newspapers. It was evident in England, as in this country, that the advertising interest is the chief obstacle to be overcome in any attempt to improve matters. Efforts to improve the laws regarding foods and drugs have always been met by a well organized lobby of advertisers, supported by highly paid legal lights. Practically all that he said is an old story in this country, where it is said that the national advertising expenses amount to about a billion and a half dollars a year, of which newspapers get approximately 700 million, mail advertising 400 million, magazines 210 million, and billboards 75 million, press and trade papers about the same amount, in addition to which are

the radio, premiums, special programs, street car cards, etc.[1] At least five patent medicine concerns have each paid more than a million dollars a year for newspaper advertising. In 1933, twelve corporations spent more than a million each for magazine advertising and the total cost of magazine advertising for 150 corporations was $93,987,970 for the year 1933.[1] In England, as in this country, advertising is a specialized profession. The manufacturers of a nostrum hand their material over to a specialist who plans the campaign and places the advertisements. Lord Horder believes that the advertisements have become a greater danger even than the remedies since they play on the fears of people, and the healthy as well as the sick are swindled.

In England, as here, while some proprietary remedies are fairly good in themselves and the claims made for them fairly reasonable, not infrequently preparations are sold that do definite harm. This applies not only to medicines for internal use but also to those for external application, and especialiy to cosmetics. Our recent experience in this country with the Elixir of sulphanilamide is an example of what has been possible here, and seems to be possible in England now. The patent medicine interests and the advertising specialists are more quick to catch on to new ideas than the medical profession. No sooner is a discovery made and published than the advertising specialists take hold of it and exploit it. In England this is shown particularly by the change from advertisements of cancer and hernia cures to those directed against rheumatism, which is coincident with the many studies and great interest which that disease is now attracting in that country.

The radio has brought to us an entirely new problem and we have recently reviewed in these columns a book devoted to the abuses of radio advertising of patent medicines. The matter has very properly attracted considerable attention. The broadcasts reach an enormous audience. In 1935, the drug manufacturers spent $15,986,507 on radio advertisements.[2] That they can afford to spend such vast sums shows the profits derived from the business.

A number of books have been written, chiefly by laymen, on the drug evil, and some by medical men. The Massachusetts Agricultural Experiment Station, *Bulletin 342,* has given one of the best expositions which have come to our attention. This *Bulletin* of 30 pages covers the subject in a masterly way and ends by giving a list of 10 articles and books which can well be studied. Other books, like ***The Traffic in Health,*** written by a physician, have appeared. The matter is one of the greatest interest and importance. The public health and medical professions owe it to the governmental agencies and to the public to give support to such laws as exist and to make every effort to aid in their efficient administration.

"We may be perfectly certain, as these lines are being read, that groups of shrewd men, here and there around our fair land, are busy sharpening their wits to try to find loopholes in the new Food, Drug, and Cosmetic Act that will let them continue to thimblerig, bamboozle, dupe, dope and poison innocent sufferers, and make millions out of it. Are these gentry going to reform and turn into plaster saints just because Congress has passed a law? Not unless human nature has had a total transmogrification."[3]

REFERENCES

1. Solomon, Charles, M.D. Traffic in Health.
2. Morell, Peter. Poisons, Potions, Profits.
3. *New York State J. Med.*, Sept. 1, 1938, p. 1201.

BOVINE TUBERCULOSIS IN CHILDREN

WE have commented before on the work being done on this subject at the University of Toronto under the National Research Council of Canada. Another report covering 13 years has been issued.[1]

Toronto is a particularly good place in which to make such an investigation since the pasteurization of milk is compulsory and the laws have been rigidly enforced since 1915; hence we have the comparison between the children who live in Toronto and those brought in from the outside. Through private physicians and sanatoria a number of tuberculous children from the Province of Ontario have been seen.

In a series of 500 tuberculous children, in 9.6 per cent of extrapulmonary tuberculosis the bovine type was found to be the infecting organism. Bovine bacilli have been recovered from bones, joints, glands, kidneys, meninges, serous surfaces, tonsils, adenoid tissue, and skin. With the exception of primary tuberculosis of the lung it has been found that no organ or tissue of the human body is immune to infection with the bovine type of organism.

The children in whom the bovine tubercle bacillus was found have come to Toronto for treatment from Ontario, some other Provinces, and some other countries, in all of which the milk supply was not pasteurized. In every case it was found that the tuberculous children had been fed raw milk. In three instances it was possible to obtain a sample of the milk used and to study it by guinea pig inoculation, and in three cases the disease was actually traced to the responsible animal.

It is interesting to note that since 1926, when this investigation was begun, much progress has been made in Ontario in the control of bovine tuberculosis and its eradication. Among 850,000 animals tested, 12.8 per cent of those found to be reactors have been removed and pasteurization has been introduced into many municipalities, 50 having adopted compulsory pasteurization in 1938. In 75 others a large part of the market milk is pasteurized. The present report shows that the incidence of bovine tuberculosis in children has fallen from 13.5 per cent in 1935 to 9.6 per cent at present, which is attributed both to the control of cattle tuberculosis in Ontario and to the greater use of pasteurized milk. No better proof of the value of pasteurization could be given. It seems strange that any opposition still exists.

REFERENCE

1. *Canad. Pub. Health J.*, June, 1938, p. 251.

THE FEAR OF AIR RAIDS

IF there are any who do not realize how fortunate we are to be living in the United States in spite of all the many things which make us apprehensive and perhaps unhappy, even a casual perusal of the general feeling in England, for example, toward air raids will make us appreciate the advantage of life here over that abroad.

We have already called attention to the manufacture of some 45 million gas masks and the drills in their use which are carried out even down to school children. That this constant apprehension must have some decided effect on

character and health goes without saying, but there is another aspect which demands attention—in some ways a more practical one.

At the recent Portsmouth Health Congress, a conference on Air Raid Precautions was held under the Presidency of the Lord Mayor of Portsmouth.[1] The Lord Mayor, in his opening address, said it was a sad reflection that at a time when local authorities were engaged in increasing and improving the social services of the country they are forced to prepare to meet a menace from the air. The isolation and safety which Britishers have felt for hundreds of years, owing to their insular position, existed no longer and that at least the early part of the next war would be waged literally on their very door steps. In view of this, the government has placed upon the local authorities the duty of passive air defense. It was an entirely new departure for local authorities which raised many problems never thought of.

A series of set discussions by six officers of the City Council followed—the Town Clerk, the Medical Officer of Health, the Chief Constable, the City Engineer, the Engineer and Manager, Portsmouth Electricity Undertaking, and the Transport and Cleansing Superintendent, upon all of whom special duties and responsibilities would fall.

There has been issued a 76 page "Air Raid Precaution Handbook (Provisional)." In July, 1937, combined coast defense exercises were carried out by the three defense services, including a complete " blackout " of the Portsmouth naval area, and more extensive exercises took place in March, 1938.

More important to us is the public health aspect presented by Dr. A. B. Williamson, Medical Officer of Health. He said that the energies of health officers are already fully absorbed in expanding health services necessary to keep pace with the great amount of recent public health legislation, and yet a new responsibility had been placed upon them which certainly requires increased personnel and a greatly increased expenditure. Except for the wonderful invention of the Wright Brothers in America, this problem would not exist today, but it is here to stay and the Air Raid Precaution Casualty Service must be a permanent organization, as man will continue to increase the speed, range, and effectiveness of the plane as a weapon of war.

The layout of the modern health department is not unsuitable as a nucleus of a casualty service. The ordinary duties are militant, the organization built up to fight against an unseen enemy—disease germs. Sanitary inspectors, disinfecting staff, health visitors, and tuberculosis nurses may be termed advance troops attempting to destroy the enemy on the outskirts. They are now called upon to build up a casualty service for those who may become victims of another kind of enemy—airplanes. The casualty service has always played an important part in war. The precautions advised and now being taken would have a very important part in preserving the morale and building up confidence that casualties would be dealt with rapidly and efficiently. The Medical Officer of Health is the man who must be responsible for an efficient emergency service; consequently, an Air Raid Precaution Casualty Service Section should be created within the health department, and in large local authorities of strategic importance there should be a medical officer for air raid precautions with an office, the assistance of a whole time senior clerk and stenographic service.

In addition, there should be in every exposed city a large model first aid post, centrally located immediately available at the outbreak of hostilities. The plan and description of the one for Portsmouth, designed by the City Architect,

is given. Among other necessities is a "Mustard Laundry," in order to handle clothing which had come in contact with poisonous gases. This is better situated at the infectious disease hospital where laundries for infected clothing, which can be easily adapted to the new uses, are already located.

From the public health standpoint, perhaps equal in importance to the health officer is the city engineer, under whose care comes the maintenance of roads and communications, repairs and maintenance of sewers, sewage pumping stations, sewage disposal works, the protection of such buildings as schools, hospitals and institutions, shelters for the public, protection of gas, electrical, and water supplies, training of personnel, and rescue of persons from buildings damaged in a raid. Of course, all of these things require tools, plant and other equipment, including facilities for transport, special vehicles, etc. Precautions must be taken against high-explosive bombs, incendiary bombs and gas bombs. Indeed, it is impossible to enumerate here all the different responsibilities which must fall upon the engineer. In addition to the maintenance of the water supply, precautions must be taken for decontamination. Reservoirs which have been polluted during air raids must be cleansed and made fit. In Portsmouth, the City Council has already included 60,000 pounds (normally $300,000) for 1938–1939 as a first installment for expenses of the Air Raid Precaution Program. Portsmouth is an important place and would perhaps be one of the first objects of an air raid by an enemy, but the program already under way there and the huge expenditure as the first installment will give an idea of how the people in the exposed parts of the British Isles are feeling.

As during all the years of our existence as a country, so now we should still feel thankful for the Atlantic Ocean which lies between us and the countries in which so much unrest and bitterness are evident. In spite of the prediction of what man will do with implements of war in increasing their destructiveness and range, we indulge the hope that we may never be called upon to take such precautions as England feels to be necessary, and never be under the mental strain which is so evident there and in other European countries.

REFERENCE

1. *J. Roy. San. Inst.*, Oct., 1938, p. 303.

AN UNUSUAL SUICIDE

CURIOUS and unusual methods of suicide are occasionally reported, but as far as we are aware the instance here recorded [1] is the only one brought about by the injection of virulent tubercle bacilli into the veins.

The subject was a medical man 29 years old who had a family history of tuberculosis and who had probably suffered himself from a pulmonary lesion. Two days after the injection, fever began and persisted until his death at the end of 3 months. Nine days after the injection a radiograph showed normal lung fields, but one taken 23 days later gave a typical picture of miliary tuberculosis, and one taken 12 days before death showed confluence of the shadows. Enlargement of the spleen was observed within a few days, but there was neither cough, dyspnea, nor sputum until shortly before death, which was due to meningitis. Most interesting were the blood findings on repeated examination. At first there was a relative mononucleosis with 53 per cent neutrophils, and then

a gradual increase of this type up to 90 per cent. Eosinophils were absent throughout the case.

Ten days after the injection no culture of tubercle bacilli could be isolated from the blood either by Loewenstein's method or by animal inoculation. These results confirm the experiments made by Nocard in 1888 and by Bang in 1891.[2] The report states that while it is practically certain that bacilli reached other organs in the body, clinical lesions were found only in the lungs and meninges. Another point is that this case appears to prove that under some circumstances exogenous reinfection may overcome immunity acquired from previous clinical disease. It must be remembered, however, that the dose here was overwhelming and we have always taught that immunity was to a large extent relative and can be overcome by various adverse circumstances or a combination of them.

REFERENCES

1. *Brit. M. J.*, Aug. 27, 1938, pp. 458–459.
2. Editorial, *A.J.P.H.*, Sept., 1938, p. 1118.

PUBLIC HEALTH EDUCATION*

Syndicated Health Education—The "Annual Directory of Syndicated Features" lists the following writers of health columns:

Dr. George W. Crane, Dr. A. Markowitz, John C. Kraus, Dr. Herman N. Bundesen, Dr. Lewis Haney, Dr. Morris Fishbein, Dr. I. S. Cutter, A. J. Balkins, M.D., Stanley Miller, Dr. Frank McCoy, Dorothy Ducas and Elizabeth Gordon, Dr. Iago Galdston, Artie McGovern, Jane Stafford, Dr. William Brady, Dr. James Barton, Dr. W. E. Aughinbaugh, John C. Kraus, Josephine Lowman, Dr. C. N. Chrisman, Dr. Claud N. Crisman, Dr. Logan Clendening, Royal S. Copeland, M.D.

The Directory is included with the Sept. 24, 1938, issue of *Editor and Publisher,* Times Bldg., New York, N. Y. *10 cents.*

Exhibits All the Year Round—At a session of Natl. Conference of Tuberculosis Secretaries, Raymond H. Greenman of Rochester presented "The Use of Exhibits in Mass and Group Education."

Here are selected paragraphs:

We use our exhibit—little stages, pictorial statistics, shaded maps, poster drawings—to arouse interest in a particular need or service; and as we were interested in more than one need, the number of our exhibits has increased.

We find that pictures of real persons are more effective than drawings. We cut up and mounted the figures on billboard posters which we bought from the National Association and our progressive State Committee, and we noted the reactions of our own committee members to the reading of X-ray pictures and posters illustrating approved modern methods of finding and treating early tuberculosis.

We wanted our exhibit material to be in use all the time. We were able to set up a health teaching center in a vacant home next door to our building. Last October, this center was officially opened, intended especially for the information of professional groups not primarily for the general public. To this center have come doctors, nurses, social workers, health education teachers, in groups of from 20 to 100—more than 1,000 of them. At this center our Board and all our Committees meet—300 representative citizens. Here we show sound motion pictures and here we not only show exhibits but we submit our material to critical analysis. We analyze our points of contact and we follow out the constructive suggestions of our friendly critics. . . .

Now our exhibit service is functioning 12 months of the year instead of only at the time of an exposition or a county fair, or a convention. The sizes of our exhibits vary from 2 feet square to 15 feet by 10, the larger ones carried by a trailer. All our exhibit material is framed and in good condition, and has the specific approval of our medical advisers.

Fifteen years ago we spent $800 for a "Healthy House" exhibit during Labor Day Week at the Rochester Exposition. This past year we spent $500 for the maintenance of our teaching center and 10 exhibits which were carried to all parts of our county.

Next year in the new home of the Rochester Academy of Medicine an exhibit space is being provided on the first floor for a modern "Museum of Health." We are committed to assist in providing exhibit material dealing with modern methods of health preservation. These are intended to be of special interest to doctors' wives who are important people in the community.

How about Staff Conferences?—We don't know how general are staff conferences outside the nursing groups. As training on the job they ought to serve more groups than nurses only. As a builder of a better working staff they should be of general service.

Our Nurse, City of New York Dept. of Health (June, 1938) answers "Why have staff conferences?" from the viewpoint of nurses:

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

This question was recently put before a group of newly promoted Health Department supervisory nurses. From their own experiences they contributed many and varied reasons. Among them were: to improve services; to discuss a common problem; to present new material; to explain new procedures; to analyze a case history; to encourage staff participation; to raise morale; to plan for the future; to interpret vital statistics; to become better acquainted with each other; to learn the needs of the staff; and to take time out to think what one is doing.

Then here are some of the questions which face those who undertake staff conferences:

How to prepare material for staff conference? how to organize the physical set-up for a staff conference? how to lead the meetings? how to present material? how to summarize? how to meet individual needs? how to get group participation in staff conference? what can be done with a person who dominates? how to bring out silent members? what to do if the group becomes restless and how to stimulate interest?

Exhibits and Museums—The interest of the American Assn. for Health and Physical Education is explained by Agnes Wayman in "Educational Exhibits and a Permanent Historical Museum," in *Journal of Health and Physical Education*, 311 Maynard St., Ann Arbor, Mich. May, 1938. *35 cents.*

On the one hand our national organization is encouraging educational exhibits in connection with state, district, and national conventions, and on the other hand it is locating material which might have significance historically in relation to the development not only of our organization but of value in connection with the evaluation of our whole field of education. It is doing this with the hope that eventually we shall have somewhere a permanent historical museum for health and physical education. Before expanding that idea, it might be well to discuss further the first type of educational exhibit mentioned.

With the increased emphasis upon visual education material, some of us realized that as an organization we were missing a big opportunity educationally as well as promotionally, so about 1934 we began to expand this idea of exhibits at conventions for various reasons:

1. As teaching aids they are very suggestive.
2. They help to create interest in the field.
3. They may present material of value historically, physiologically, etc.
4. They serve as propaganda in the promotion of the various phases of our field among (a) our own profession, (b) schoolmen and the more academic side of education, (c) the layman (business and professional men and women, the clergy, clubs, etc.), and thus help to create an interest and a better understanding of our aims and objectives. . . .

It is to be hoped not only that valuable material may be developed which can later be used as museum material but that through these exhibits a greater interest will be developed in actually working out projects for such use. There is, in addition, no doubt that much of value educationally is being destroyed or lost first because we fail to realize its historical significance and secondly because of lack of space. A permanent museum would make it possible to preserve such material for posterity. . . .

Mimeography Need Not Look Dull—It's partly the choice of paper; partly the making of stencils, the use of special tools offered by the manufacturers, and the running of the stencils. But it is also the use of layout devices in the arrangement of material on the page, spacing, titling, capitalization. In other words, good mimeographing calls for attention to detail, understanding the job, giving time and skill in making the most of each job. *If you don't know all of the answers please ask questions and this department will try to supply the answers.*

Remember that there can be little excuse for sloppy, dull looking, hard to read mimeograph work.

MUCH WANTED

We did not have an answer for this letter. What would you write in reply? It is a fairly common request which comes from different parts of the country. Incidentally, it might have helped if the date of the fair had been mentioned. The date helps when one is trying to answer most letters about materials for a specific use.

I am interested in putting on an exhibit at our county fair and I am interested particularly in electrical exhibits, etc., that will teach a lesson in public health, and at the same time attract attention. Something mechanical—or electrical novelty.

Please advise me where I can obtain such material, or rent same, giving prices, etc.

FOR EDUCATION AND REFERENCE

A catalogue of "Children's Bureau and Other Publications Relating to Children." Supt. of Documents, Washington, D. C. Revised. *Free.*

A classified list of social hygiene pamphlets in *Social Hygiene News,* 50 W. 50th St., New York, N. Y. May, 1938. *Free.*

"Common Colds," by Robert Olesen; "Climate and Tuberculosis," by F. C. Smith; "The Notifiable Diseases—1936." By U. S. Public Health Service. Supt. of Documents, Washington, D. C. *5 cents* each.

"Insects" is a catalogue of government publications, including those which treat of insects injurious to man. Supt. of Documents, Washington, D. C. *Free.*

"The Need for a National Health Program: Report of the Technical Committee on Medical Care." Interdepartmental Committee to Coördinate Health and Welfare Activities, Washington, D. C.

Safeguarding America Against Fire, 85 John St., New York, N. Y. Summer, 1938. The annual Fire Prevention Week number. *Free.*

"Tables of Contents of Scrapbooks on Family Budgets, Relief Standards, and Nutrition for Workers in Health and Welfare Agencies," prepared by Social Welfare and Public Health Dept., American Home Economics Assn. Here are 14 mimeographed pages of current and available references to budgets and relief standards; nutrition material for families; food for lunches, camps, etc., and foreign born; special diets; rural communities, etc. Much of it is free, all is inexpensive. *20 cents.* Send to Marjorie M. Heseltine, Room 7135, U. S. Dept. of Labor, Washington, D. C. The scrapbooks containing the material are loaned for express charges both ways.

MAGAZINE ARTICLES

"Where's the Fire?" by P. Boyer, Jr. What 2,000 highway officers think of car drivers. *American Magazine,* 250 Park Ave., New York, N. Y. March, 1938. *25 cents.*

"When the Population Levels Off," by H. P. Fairchild. Social gains when we cease to grow. *Harper's Magazine,* 49 E. 33d St., New York, N. Y. May, 1938. *40 cents.*

"The Doctors Face Revolt," by A. D. Carlson. As to medical care. *Harper's Magazine.* Sept., 1938.

Three pages on dark glasses, types, and properties. *Life,* 330 E. 22d St., Chicago, Ill. May 30, 1938. *10 cents.*

"Bronchoscopist Jackson Retrieves Things Careless People Swallow." Includes 2 pages of pictures of objects removed by Dr. Jackson. *Life.* June 13, 1938.

"Teaching Prospective Fathers to Be Good Mothers"; "One Reason Why Milwaukee Is America's Safest City." *Look,* Des Moines, Ia. Aug. 30, 1938. *10 cents.*

"How Smart Are You about Medicine?" True or false questions and answers "to test your knowledge of modern scientific treatment of disease." *Look.* Sept. 13, 1938.

"For the Common Good," by Lewis Mumford. *New Yorker,* 25 W. 43d St., New York, N. Y. Jan. 8, 1938. *15 cents.* Criticism of New York City health center architecture.

"Accidents Are 'Out,'" by H. M. Robinson. What certain industries have done. *Rotarian,* 35 E. Wacker Drive, Chicago, Ill. Aug., 1938. *25 cents.*

"Blood from a Stranger," by J. C. Furnas. *Saturday Evening Post,* Aug.

20, 1938. Blood transfusion; blood donors.

"Medical Rift in Milwaukee," by A. and H. Biemiller. The story of a medical center. *Survey Graphic*, 112 E. 19 St., New York, N. Y. Aug., 1938. *30 cents.*

REPORTING

"Annual Report" of Hygienic Institute, La Salle, Ill., helps the eye of the reader of "Comment on Activities of the Institute." There are no subheadings, but each activity or administrative unit mentioned is brought out in black face type.

COMMENT ON HEALTH CONDITIONS

Analyzing the vital records for the year 1937, there is found some improvement over the previous year, in fact, the deaths are fewer than any year since 1933. During the year 1937 there were 270 **official deaths*** in the Tri-Cities, which gives an **official death rate** of 10.2 (per 1,000 population). However, when the figures are adjusted to include residents only it is found that there were actually only 252 deaths to citizens of our community. This gives us a **true death rate** of only 9.5. This rate compares very favorably with the rate for the state of Illinois, as a whole, which was 11.1 for the same year. In other words, if the state rate had applied in this community for the year 1937 we would have had 42 more deaths. If a human life is valued at $10,000, this represents a saving of $420,000. By way of contrast the health department spent during the year $26,952, and claims some credit for the above saving.

However, many other factors enter into the saving of human life, which are beyond the control of health departments. For instance in 1936 there were 16 deaths from heat stroke alone and not a single one in 1937; and from all violent and accidental causes there were in 1937 only 17 deaths against 50 for 1936. The year just closed showed increases in deaths from heart disease, apoplexy and tuberculosis, but fewer from cancer, external causes, pneumonia, nephritis and diabetes. For comparison and details of life loss see tables Nos. 25, 26 and 34.

The **infant death rate** for the year showed a decided improvement. There were 13 deaths recorded against 17 for the year before. This gives an **official rate** for the year of 29.5 (per 1,000 live births) against 40.7 for the year before. When the figures are corrected for residence it is found that there were only 10 infant deaths (corrected births also less), which gives a **true infant death rate** of 30.7. This compares very favorably with the state rate of 43.0 for the same year.

Two **maternal deaths** occurred during the year, which gives an **official rate** of 4.4 per 1,000 births. Unfortunately these deaths occurred to citizens of our own community, so that the **true maternal death rate** for the year becomes 6.1. For 1936 there was not a single maternal death in the entire community, and therefore the rate was 0.0. La Salle and Oglesby has not had a maternal death for two years. The state for the same year had a rate 3.7, which is the best in its history. If we averaged our rate for the two years, in an attempt to smooth out the great fluctuation that can occur in small populations, the rate becomes 3.1.

The number of **tuberculosis deaths** increased from 4 in 1936 to 8 in 1937, thereby doubling the **official death rate** from 15.1 to 30.2 (per 100,000 population). However, some of our deaths occur in the **county sanatorium**, and when these are

*All deaths occurring in Tri-Cities without respect to residence

From Hygiene Institute Report

"Annual Report" of New Haven, Conn., Dept. of Health is lightened by two picture diagrams. If many of the capital letters had been changed to lower case, quicker reading would follow. The 2 page report on "Public Health Instruction" includes the statement that

A total of 184 news articles aggregating 2,668 inches of space appeared in the two newspapers of New Haven directly concerning the department and most of them prepared by the department. In addition, considerable other health promotion material was printed covering the work of other health agencies.

"Annual Report" of Massachusetts Society for Social Hygiene, 1937–1938, gives 20 mimeographed pages to addresses at the annual meeting, and a page to the business session. Such a report would be given added interest by having more than 3 headings in 20 pages. The reader would be helped by the inclusion of a "contents" page, especially if it took the form of a concise description of what followed.

The "Health" section of "Annual Report" of Council of Social Agencies, Los Angeles, Calif., is a reminder of the grouping of health agencies as a section of a general council in many cities. In not a few of these cities wise leadership has resulted in more and better health education.

"Milestones along New Haven's Highway of Health" reproduce a series of 8 murals offered by the city Dept. of Health to the local Tercentenary Exposition. In *Health*, New Haven Dept. of Health. May, 1938. Striking portrayal of problems and practices from then to now.

"New, Reëstablished, and Reorganized Services of the Dept. of Health: 1935–1938." State Dept. of Health, Harrisburg, Pa.

"Health Week Report" number of *National Negro Health News*, U. S. Public Health Service, Washington, D. C. July–September, 1938. *Free.*

"A Quarter Century of Nursing Service. Annual report of Visiting Nurse Assn., Stamford, Conn. "Twenty-Five Years Ago" is the record of a day's

service by the one nurse first engaged, with a full page picture of the first nurse astride her bicycle. This record is balanced by "A Day in the District —1937."

"Report Mimeographed by Marian Galizanske" appears on the page after the title page of "Annual Report" of Dept. of Health, Racine, Wis. Mimeographed on one side of the sheet, 45 pages, an index, no mention of health education, 2 simply done picture diagrams, a "Forward" section (lost in the back part of the volume), and a pleasing printed cover page.

To get a picture of the educational-publicity activities of a large city health agency—see "Public Relations Department" in the annual report issue of *Quarterly Review*, New York City Cancer Committee, 130 E. 66th St.

MOTION PICTURES

"Selected Motion Pictures." Catalogue of 16mm silent and sound pictures, free and rental. Includes a few health pictures, and many other educational and diversion pictures for use in clinic waiting rooms, sanatoria, etc. Motion Picture Bureau, Y.M.C.A., 347 Madison Ave., New York, N. Y., or 19 S. La Salle St., Chicago, Ill.

"Visual Review—1938," by M. M. Witham, is an annual issued especially for school people. Of special value to any health worker who wishes to collaborate in visual education in the class room or the general assembly. Includes chapters on the high school newsreel, the use of filmslides, and the miniature camera. Society for Visual Education, 327 S. La Salle St., Chicago, Ill. *Free.*

New pictures are announced by Health and Cleanliness Council, 5, Tavistock Square, London, W.C.1, England.

The old favorite "Giro the Germ" is to be seen in new adventures in the Council's new cartoon film "Giro Fast and Loose" which is to be issued in the early autumn. Two other new films are also in preparation—one deals with the homes of mankind from the Garden of Eden to Nisbet House, Hackney, with its up-to-date electric equipment, the other is intended for housewives.

Offered by state and local tuberculosis associations (produced by Natl. Tuberculosis Assn.):

Rex Ingram, who played the part of "De Lawd" in "Green Pastures," plays a leading rôle in "Let My People Live." The picture will run 20 minutes. With an all-Negro cast, it dramatizes facts of tuberculosis as it affects the colored race. "Let My People Live" was filmed entirely at Tuskegee Institute, Alabama, and among its features is the Tuskegee choir of 100 voices, under the direction of William L. Dawson. The Federal Theater Project granted Ingram leave of absence from the WPA stage production, "Haiti" to make "Let My People Live." Other persons in the cast include Peggy Howard and Erostine Coles.

"Diagnostic Procedures in Tuberculosis" is the title of a new 15 minute film prepared for medical societies, public health groups, medical students and nurses. The four eminent specialists who take part in the film are Dr. Kendall Emerson, Managing Director of the National Tuberculosis Association, Dr. Ralph S. Muckenfuss, Director of the Bureau of Laboratories, New York City Department of Health, Dr. Esmond R. Long, Director of the Henry Phipps Institute and Dr. Edgar Mayer, Assistant Professor of Medicine at Cornell Medical School and formerly on the staff of Trudeau Sanatorium.

RADIO

"The Health Hunters," New York State Dept. broadcast over Station WGY, has been moved from 5:00 p.m., Saturdays, to 11 a.m.

If you have use for a list of broadcast stations, ask Federal Communications Commission, Washington, D. C., for a free copy of "List of Radio Broadcast Stations, By State and City."

"Let's Take The Air: A Manual on Radio Production," by John E. Kieffer (with Philadelphia Health Council and Tuberculosis Committee), Pennsylvania Tuberculosis Society, 311 S. Juniper St., Philadelphia, Pa. *25 cents.* This will supplement the *Scholastic Magazine*.

BOOKS AND REPORTS

Occupational Diseases in Ohio: Annual Report for 1937—*By Kenneth D. Smith, M.D., and John B. Kistler, M.D. Columbus, Ohio: Ohio Department of Health,* 1938. 52 pp., mimeographed.

Following the general style of the brief annual reports published by the department in previous years, the current report adds 31 tables to the customary summarizing table of Compensable Occupational Diseases, which now covers 10 years (1928–1937 inclusive). A copy of the law covering Compensable Occupational Diseases in Ohio includes the last one to be added—silicosis—which extends the list to 22 named diseases or injuries.

From the date of the first report to the department of an occupational disease, made May 15, 1913, to the end of the year 1937, 22,027 reports were received. About nine-tenths of those reported have been on the compensable list since compensation for this class of diseases began in 1921. It should not be inferred, however, that the compensation list is nine-tenths perfect since physicians are more prone to report afflictions which are compensable.

During 1937, 1,693 reports were received of which 1,390 (82.1 per cent) were males and 299 (17.4 per cent), females—the sex not being learned for 4. The reports were made by 753 physicians, or 8.2 per cent of the approximately 9,200 physicians in the state. The workers were employed by 926 different employers.

As in past years, infection and inflammation of the skin (dermatitis), consequent upon exposures chiefly to irritants, made up about two-thirds (66.1 per cent) of the total cases, and 68.5 per cent of the compensable cases. Of these, 826 (80.4 per cent) were males and 207 (19.3 per cent) were females.

Constitutional poisonings comprised 218 cases of which 195 were lead poisonings.

Wrist-strain (tenosynovitis) affected 155, and "housemaid's knee" (prepatellar bursitis), 26. Of the latter, only 2 were females, however. Ulcers of the nose and skin, due to inhaling chromium compounds, made up 68 cases—11 less than the preceding year.

Silicosis, the last disease to be added to the Compensation Schedule (92nd General Assembly, 1937), was responsible for 40 reported cases, 19 of which were reported before the Act became effective on July 31, 1937. Silicosis cases are only entitled to a maximum of $3.000, or less than one-half of the $6,500 permitted for other types of occupational diseases and injuries.

The customary annual inquiry of the 21 tuberculosis sanatoria in the state was not made for the year 1937, but such inquiry has yielded only a comparatively few cases in past years, some of the larger sanatoria reporting no occurrence of silicosis cases. From this it may be assumed that few of these cases gravitate to sanatoria, or are really infected with tuberculosis.

Of the 107 non-compensable reports, 89 were males and 18 females. This group incurred all manner of physical injuries such as heat, cold, friction, pressure, repetitive motions, strains, etc., but included numerous irritants, poisons, and infections not on the Compensation Schedule.

The summarizing tables will be of

particular interest to those concerned with the various afflictions reported. In general, a gradual increase has been noted in the decade, 1928–1937. The report does not go into the matter of premium costs and disbursements, nor does it cover the number of fatal cases —these being matters within the jurisdiction of the Industrial Commission, which publishes monthly and annual summaries separately.

EMERY R. HAYHURST

Osler's Principles and Practice of Medicine—*By Sir William Osler, M.D., (13th ed.) Revision by Henry A. Christian, M.D., LL.D. New York: Appleton-Century*, 1938. 1424 pp. Price, $9.00.

Only an intrepid author would undertake to reëdit the single volume edition of Osler's classic text. This Thirteenth Edition is the work of Henry A. Christian, M.D., Hersey Professor of the Theory and Practice of Physic at Harvard, who succeeds the late Thomas McCrae, M.D., as reviser. Dr. Christian has prepared the revision without the assistance of other experts. In this respect the edition resembles the first, of 1892, which was Osler's own; yet a volume which has had such a profound effect on the practice of medicine amply deserves periodic revision. Readers of the present generation may not remember that it was an early edition of this work which, when called to the attention of Mr. Rockefeller, resulted in very liberal gifts for the promotion of medical science, including the establishment of the Rockefeller Institute for Medical Research.

It is illuminating to compare this 1938 text with the Eighth Edition published in 1916, which was the last revision in which Sir William participated. Although the number of pages has been increased during this 22 year interval by only 16 per cent, the topics have become proportionately more numerous and they reflect many of the changes in medical knowledge. Topically the volume carries most of the subjects included in the larger systems of medicine.

It is because of this convenient accessibility that the volume is important as a quick reference text readily available to public health workers. On the whole this edition is to be commended on the inclusion of statements consistent with accepted epidemiologic data, but it would be desirable if the statements on incubation time, duration of infection, and recommended periods of isolation were made consistent with the consensus of experts in this field as expressed in the A.P.H.A. report on the *Control of Communicable Diseases*. However, the present edition is much improved in this respect over earlier ones.

The critical reader will recognize modern concepts of the epidemiology of tuberculosis, syphilis, yellow fever, and the diseases of the rickettsia group. He will have to seek the documentation of the evidence elsewhere, and each specialist will doubtless discover areas in which his own opinion differs from the text. He may even wonder whether the time has passed when any person can be expected to take responsibility for all the contents of such a comprehensive volume, much of which of necessity must be other than first-hand knowledge.

Yet the impartial reader will be satisfied that the revision has been the work of as able an author as Dr. Christian and will rejoice that the oncoming generations of medical students may have access to so worthy an edition of William Osler's masterpiece.

REGINALD M. ATWATER

Vitamin B_1 (Thiamin) and Its Use in Medicine—*By Robert R. Williams, Sc.D., and Tom D. Spies, M.D. New York: Macmillan*, 1938. 411 pp. Price, $5.00.

Vitamins were discovered only about a quarter of a century ago, although clues to the existence of these accessory food factors had been developed by scientists at the beginning of the present century. So rapid has been the progress in vitamin research, however, that now we have an entire book of some 400 pages devoted to only one of the dozen or more vitamins now recognized, catalogued, and synthesized.

The book, one of the medical monograph series edited by Dr. George R. Minot, is an excellent one in every respect. Not only does it give the complete story of thiamin, or vitamin B_1, in relation to food deficiency states and their clinical treatment, but it offers valuable material on the history, the chemical nature, and the physiological applications of this important substance. The book is written in a lucid style by leading authorities, and it is well printed, with a good index.

This treatise is a valuable contribution to the scientific literature on human nutrition. It should be indispensable to all persons who are concerned with the diet of man, a subject which continues to merit serious concern.

JAMES A. TOBEY

Technics for the Bacteriological Examination of Drinking Glasses—*Published in "Health Officers News Digest" by The Public Health Committee of the Cup and Container Institute, 30 Rockefeller Plaza, New York, N. Y.*, 1938.

This fine collection of laboratory procedures clearly indicates that we have passed far beyond the pioneering stage in the bacteriological examination of eating and drinking utensils. The fact that no two of the technics used in 15 different cities are identical might seem at first thought a fatal objection to the whole procedure. This is actually about as far from the truth as it could possibly be. As a matter of fact, in the sanitation of eating and drinking establishments, the rôle of the laboratory is a comparatively simple and minor one. By any of these procedures clear differentiation can be made between cleanliness and filth. Therefore they are all good methods. The sole possible objection lies in the fact that their results are not comparable. The Sub-Committee of the American Public Health Association on Standard Methods for the Examination of Dishwashing Devices has not claimed that its proposed technic is the best possible method. What can be claimed for it is that it is actually in use. The laboratory technicians and the sanitary inspectors working with Cumming in Washington, D. C., through information gained by this method have made their city a safe place in which to eat and drink—soda water.

The proposed technic permits not more than 500 organisms per utensil surface area examined. Is this too liberal? Purveyors of food and drink in Washington who have paid fines and lost their licenses do not think so. In practice this method has produced the desired results. It is a good method, however, chiefly because it has been and is being used.

We know now that the methods which have been in common use for the bacteriological examination of milk during several years past are comparatively crude. Even so, their application has brought about the production of milk far cleaner than that commonly purveyed prior to the widespread use of the plate count.

The eating and drinking utensil examination is a parallel case. It is time to stop calling attention to minor differences in technic. Let a uniform method be adopted, one proved in practice to be a *good* method. Then let us have reported the results of its application. What was the average count per beer parlor at the beginning of this

year, and what is it now? How do your sanitary inspectors operate and coöperate to give the health officer the information which leads to successful prosecution of malefactors. We know all we need to know about the laboratory technic—we want to know more about the field and the court technic.

Fundamentally (and within natural limits): the most useful technic is the most used technic.

Let us therefore adopt one good procedure as a comparable method, then we can all know what we mean when we say we permit not more than 500 organisms per utensil surface area examined.

The most useful is that which is the most used—*ceteris paribus.*

A. P. HITCHENS

Macleod's Physiology in Modern Medicine—*Edited by Philip Bard, with the collaboration of Henry C. Bazett, George R. Cowgill, Harry Eagle, Chalmers L. Gemmill, Magnus I. Gregersen, Roy C. Hoskins, J. M. D. Olmsted and Carl F. Schmidt. (8th ed.) St. Louis:* Mosby, 1938. 1051 pp. Price, $8.50.

After defining physiology as "an application of the known laws and facts of physics and chemistry to explain the functions of living matter," Professor Macleod in the first edition of his book *Physiology and Biochemistry in Modern Medicine* argued for the wider use of this science in clinical medicine. By recourse to its methodology and factual material in the study and interpretation of disease, he reasoned, diagnosis would become a science as well as an art. In putting physiology forward as an applied science, he laid out his book accordingly to include only those topics with a practical bearing. Later editions, shorn of the biochemical title and of much biochemical material which had by that time asserted its own place in medicine, reached out into the entire physiological domain regardless of any immediate practical considerations. If the form thus took on a broader gauge, it did not violate the original spirit of interest in applicability.

The latest edition of *Macleod's Physiology in Modern Medicine,* the first since Professor Macleod's death, is a collaborative work of nine physiologists. Continuing the book's trend, they have carried further its topical expansion. This is a sound design, for usually what may seem at the moment to be a matter of purely academic interest is ultimately found to have its practical turn. This new edition is, therefore, a worthy successor. To designate outstanding features in a book that is of such uniformly high caliber would be a factitious gesture. It is, however, a gratifying commentary on progress in physiology that the section on the neuromuscular system has come to occupy 20 per cent of the space in the present edition.

With the aim at present toward early diagnosis of disease, an aim that often oversteps the range of sensitivity of the usual clinical technic, the desideratum for precise procedures is constantly bringing biochemical and physiological methods into use. To those desiring to keep abreast of developments in physiology, it should be said that this book bears the stamp of authority. It is likewise appropriately designed as a textbook for medical students.

H. D. KRUSE

Cause and Prevention of Disease—*By William Harvey Perkins, M.D. Philadelphia: Lea & Febiger,* 1938. 713 pp. Price, $7.50.

This book most certainly presents a novel viewpoint of preventive medicine. It appears to be more of a textbook of philosophy than of medicine. It is an original concept that the body of man is a "falsely isolated interference pattern" and just what that means is not clear to the reviewer.

The entire work is based on Six Categories of the Cause of Disease. No one can object to the classification since it includes all known causes of disease. The categories are: I—Inherited Factors; II—Defects of Nutritive Elements; III — Exogenous Chemical Agents; IV — Physical Forces and Energies; V—Vital Activity of Invading Organisms; and VI—Psychobiologic and Bio-social Influences. Under these various categories there is an immense amount of information packed in a relatively small volume.

About 70 pages are devoted to food and nutrition, 175 to poisons, 85 to mechanical forces and energies, 200 to invading organisms, and 65 to psychobiologic factors. There is an excellent chapter on sex hygiene. Less than a page each is devoted to pneumonia, syphilis, and cancer, all of which are important problems. More space is given to brass founder's ague than to syphilis, more space given to carbon disulphide poisoning than to pneumonia, and three times as much space given to carbon monoxide poisoning as is given to cancer. However, the book is not intended as a textbook on public health administration and it is probably true that the preventive aspects of syphilis, pneumonia, and cancer can be summed up in a few words. Brevity is often an asset in a textbook.

This book would be a difficult one for most students to cover in the time usually allotted for courses in preventive medicine, even if they could understand it. Many of the definitions are not clear. For example, (page 21) "Health is a state of relative equilibrium of body form and function which results from its (sic) successful dynamic adjustment to forces tending to disturb it," and (page 489) Immunity is defined "as a state of resistance and antagonism toward invading organisms due to particular qualities aroused in the tissues of the host in response to particular qualities possessed by the pathogen." The book would be more readable and more easily understood if fewer and simpler words were used. As it is, much of it is polysyllabic to an extreme.

There are a number of errors which should be corrected in future editions. On page 420, we are told, "The thermal death time of a species of bacteria is the time required to kill the organism at a given temperature or range of temperature. . . . For example, milk is readily sterilized by pasteurization at 63° C. (145° F.) for thirty minutes, its thermal death time at this temperature." This language makes milk a species of bacteria. Sterilization and pasteurization are not synonymous, and most pasteurized milk is not sterile. Again, (page 498) "In rural areas this is most frequently the homestead with its stream, spring, well, or cistern. All of these sources can be readily contaminated the most common coming from circumstances which permit the entrance of human and animal excreta." To what does "the most common" refer? The success of botulinus antitoxin in combating botulism after it has developed is open to question. No mention is made of the use of magnesium oxide for treatment of drinking water containing fluorine.

As a catalog of all the possible ills to which the human being is subject, mentally, physically, and morally, the book is unique. We do not believe the relative amount of space given to different subjects is wise. The author correctly says, "In no other field of preventive practice is there more hope of success than in the science of nutrition"; yet only some 70 pages are given to it against 175 to poisons.

The author has compressed an enormous amount of information into this volume and deserves credit for a refreshing viewpoint in writing what is probably the most difficult book there is to write —a textbook of preventive medicine.

The printing and make-up are excellent, though some misspellings have escaped the proof reader. The index is good. F. L. ROBERTS

A Textbook of General Bacteriology—*By Edwin O. Jordan. Revised by William Burrows. (12th ed.) Philadelphia: Saunders,* 1938. 808 pp. Price, $6.00.

The 11th edition of this well known text appeared in 1935. Since then we have had to mourn the death of the author, and the revision for the 12th edition, which is just off the press, has been made by the Assistant Professor of Bacteriology at the University of Chicago.

Several sections have been entirely rewritten. Owing to the great interest which attaches to the virus diseases and the amount of study given to them, the most extensive revision has been made in the chapter concerning them. Another disease of great importance and on which much work has been done since the last edition, is poliomyelitis, so the section on this disease has been entirely rewritten. The chapter on influenza has been moved into the virus disease section and extended to include the recent work on the identification of the virus. The many new discoveries in regard to yellow fever have required that this subject be considerably amplified. All through there are evidences of careful revision in order to bring the book up to date.

There are, however, still some parts which cannot be regarded as up to the minute. An enormous amount of work has been done on the so-called coli-aerogenes group. There is no standard nomenclature for the various related organisms included in this group. The term "coliform" has been proposed by Breed and Norton and is being used in England to a considerable extent. The text still clings to, and quotes at length, the 6th edition of the Report on Standard Methods of the A. P. H. A., 1925. The Standard Methods of the A. P. H. A. is the only authoritative publication on the subject, but the edition quoted is 13 years old and cannot be regarded as entirely satisfactory in light of the knowledge gained in the meantime. We do not understand why the 8th edition published in 1936 was not quoted. This whole subject is of especial significance in regard to the examination of water and of milk. The text does not even mention the phosphatase test to determine the efficiency of pasteurization.

The volume contains practically the same number of pages of text as the 11th edition. The Index is longer but the total size of the book is nearly 20 pages less, since the Index of Authors given in the 11th edition has been omitted.

The printing and make-up of the book are excellent. The first edition appeared exactly 30 years ago, and since that time it has been a standard. All bacteriologists and teachers have looked forward to the successive editions and have not been disappointed. We welcome the present revision which enables the book to keep the place of usefulness it has held for so long, and keeps before us the name of an honored teacher.

MAZYCK P. RAVENEL

Pasteur: Knight of the Laboratory—*By Francis E. Benz. New York: Dodd, Mead,* 1938. 232 pp. Price, $2.00.

This life of Pasteur was written for older boys and girls, and by an author who knew how to do it well. Pasteur's life was dramatic from the time he left by bus from his home village for Paris through all the years of maturity during which he achieved many things for the benefit of mankind. Pasteur was versatile. He started with chemistry and wound up in biology. Occasionally he got into knock-down fights

with real and pseudoscientists. He had a simple Christian faith and was devoted to his family. Tragedy struck him several times. He was finally honored by governments in many countries. All these happenings were amply recorded at the time in documents and letters to give joy and enthusiasm to later authors fired by a zeal to keep Pasteur's light burning brightly in succeeding generations. This is the kind of book which should be in the library of every school and every public health worker who needs well written source material to pass on to the public to make his own local work better understood and kept on the upgrade. W. W. PETER

The Laboratory Diagnosis of Syphilis—*By Harry Eagle, M.D. St. Louis: Mosby,* 1937. 440 pp. Price, $5.00.

No other tests performed in public health and clinical laboratories are subject to so many ramifications—including technics with their inherent difficulties, opinions of laboratory workers, personal idiosyncrasies—as those used in attempting to aid physicians in the diagnosis of syphilis. Experts will disagree on every phase of the laboratory work, methods as well as interpretation of results. The author has rendered a real service in presenting an extensive discussion of the more important laboratory tests and the theoretical bases for them. Although the book can be read intelligently only by well trained and experienced laboratory workers, it should be placed in the hands of all those engaged in serological laboratory diagnosis. If no other purpose is served than to confuse the inexperienced or inadequately trained laboratory technician, of whom we suspect there are altogether too many, to the point where tests for diagnosis of syphilis will be discontinued, the author's effort will not have been entirely in vain.

It is not possible even to mention many of the very excellent discussions, in our opinion the best now available. Much time and care on the author's part are evident in all of them. The Wassermann reaction is thoroughly discussed both from a theoretical and a practical standpoint, including a summary of commonly encountered difficulties. Three modified Wassermann procedures are described. One is the author's own technic, the second is the Kolmer method, and the third a procedure using human cells. The value of including this last is doubtful because of the admitted difficulties involved but is justified by the author on the basis of possible non-availability of sheep cells.

The mechanism of the various flocculation tests and the factors influencing the results are discussed in considerable detail in an effective and clear manner from the standpoint of colloidal chemistry. The basic reaction in both the flocculation and Wassermann tests is regarded as identical. The "reagin" of syphilitic serum is regarded as a "specifically reactive globulin which is deposited on the surface of the antigen particles." This film acts as a protein sensitizing agent in the flocculation test. The summary of requirements for a satisfactory flocculation test should be read by those interested in choosing one of the various methods in vogue. Seven flocculation technics are described: Eagle, Hinton, Kahn, Kline, Meinicke, Müller-Bollengs and Sach-Georgi-Witelesky. The author apparently prefers those tests which depend on "clarification" (Eagle, Hinton) as against those dependent on "opacification" (Kahn). It must not be inferred, however, that other than a broad view has been taken. The chapter dealing with comparison of serologic technics, including a discussion of the relative methods of Wassermann and flocculation tests is particularly to be

commended. The author recognizes that there is something more to be considered in choosing a test than sensitivity and reliability, *i.e.*, "technical simplicity" and "reproducibility" under the conditions of work.

The discussions of the interpretation of the results of serologic tests are recommended for consideration of laboratory workers and of those for whom the tests are made, physicians.

The book leaves the reader with respect for the author's opinions and admiration for his ability in accomplishing so well such a difficult task.

JOHN F. NORTON

Dynamic Causes of Juvenile Crime—*By Nathaniel D. M. Hirsch, Ph.D. Cambridge, Mass.: Sci-Art Publishers,* 1937. 245 pp. Price, $3.25, plus 15¢ postage.

This is a challenging book. It is based upon a wide experience as a clinical psychologist and a detailed study of 1,000 case histories of delinquent children, a number of typical individual case reports being summarized. The author classifies the causes of juvenile crime under 4 main headings, 2 of which are not usually considered in similar studies. To heredity and environment Dr. Hirsch has added "accidental causation" which he has "defined negatively as that causation which has social effect but is beyond environmental control; is independent of hereditary functioning and also relatively unrelated to the social causation inaugurated by genius." "Genius," he feels, while "an elusive and only mediate cause of juvenile delinquency," has an enormous influence upon "the spirit of the nation, community, age." "When there is a dearth of geniuses, or when the dice of the times are too heavily loaded against them, second and third rate 'leaders' occupy positions of first rate responsibility. The spirit of the nation and of the age reflects these leaders and, not merely bread and circuses, but kidnappings and mutilations become the demand and ideals of the day."

According to the author, juvenile crime is a symptom complex resulting from pluralistic causation and forming a *gestalt* which may be considered under one or more of the following: (1) Defective intelligence, (2) General instability, (3) Hyper-suggestibility, (4) General immaturity, (5) Home conditions, and (6) Neighborhood. The author challenges the generally accepted view that broken homes and a poor milieu are highly significant factors in the production of juvenile delinquency. As contributing factors he mentions: (1) Psychopathic Personality, (2) Constitutional Inferiority, (3) Adolescent Paranoid types, (4) Endocrine Disturbances, (5) Emotional Conflicts, and (6) Inferiority Complexes. The stand is taken that delinquency is grounded in many causes and that no one cause is usually responsible for juvenile crime. These causes are well analyzed and discussed and data tabulated to substantiate the conclusions reached.

In the Summary and Suggestions Dr. Hirsch gives us a clear picture of the results of his study. His philosophic deductions are thoroughly pessimistic and hold very little hope for the immediate future. Only through the miracle of spontaneous generation of a galaxy of men and women of genius can we be saved from the corrosion of crime!

We are applying only ineffective palliatives today. "No solution of any of the myriad of major problems is possible without the sudden appearance of men of Genius—men with kingly chromosomes, of philosophical mold, of far-reaching vision. Without such a miracle there is no salvation for the Western World of 1936. But perhaps the gods are again interested in our

planet and will create a bevy of philosophical, kingly geniuses by the sowing of dragons' teeth."

L'homme propose, et Dieu dispose!

RICHARD A. BOLT

Social Agency Boards and How to Make Them Effective — *By Clarence King. New York: Harper,* 1938. 102 pp. Price, $1.25.

The thesis of this small volume is that social work in any one community cannot long remain at a level above that wanted by a majority of the citizens, and that a good board is the best medium yet found for interpreting social work to the public as well as the community's wishes to the agency staff.

Pointing out the advantages and disadvantages of boards, the author gives practical and concrete advice as to how to make good ones, taking up the problem from the viewpoint of both the private and the public agency. He discusses who should be members, how much authority they should exercise, and what the relationship of the board to the community and to the executive of the agency should be.

The book should be profitable reading for all who are or plan to be board members, as well as to the members of staffs of agencies that have boards or are considering having them. It should certainly be read by anyone who is considering taking a position that will include dealing with an agency board.

CATHERINE GROVES PEELE

Fearfully and Wonderfully Made: The Human Organism in the Light of Modern Science—*By Renée von Eulenburg-Wiener. New York: Macmillan,* 1938. 472 pp. Price, $3.50.

This book contains 32 chapters, an appendix, bibliography, index, and covers an astonishing variety of topics. These include the physico-chemical properties of the cell, cell division, fertilization of the ovum, chromasomes, genes, embryology. Some of the other major topics are the structure, function, and mechanisms of the various tissues and organs; the digestion and absorption of carbohydrates, fats, proteins, and mineral salts; the intermediary metabolism of the various nutrients, and the end products of their metabolism including energy; chemical asymmetry; ductless glands and hormones; vitamins.

The final chapter is, "The Human Organism as a Whole," and the diversity of its content may be indicated by a few of the subjects discussed. These include: "The genes as electromagnetic fields. Death as an organismic phenomenon. Memory as a function of living substance. Bio-electric phenomena. The new physics and the biologists' interpretation of life."

The wide variety of material throughout the book is indicated by a few selected minor topics. These are: "Emulsification; physical forces of surfaces, surface tension, and division of liquids into drops. Physico-chemical structure of water. Physico-chemical laws of gas exchange: diffusion, solution, partial pressure, and density. Electron, proton, neutron and position. The rôle of electrolytes in physiological functions. Methods of expressing hydrogen-ion concentrations."

Needless to say most of the content will sound more familiar to the lay reader than the topics listed above. For the most part it is a straightforward account of established facts, with definite acknowledgment of the limitations of our present knowledge. The citations to the literature end with the year 1936. As suggested by the title, and appropriately in this type of book, there is also considerable of hypothesis, and of speculation. These are necessary if the frontiers of our present knowledge are to be expanded.

Much of the content of this book is outside of the reviewer's training and experience, but he is convinced that the author is a serious and conscientious student, and that with minor exceptions the factual content is authentic. There are some lapses however in the portions of the book which the reviewer feels able to read critically; so it is assumed that they occur in the other portions also. For that reason the reviewer believes that when reading this book any student who is attempting to become a specialist in any phase of biological science should be on guard. For the lay reader who wishes to satisfy his curiosity as to the structure and mechanisms of the body these errors are probably of no consequence.

The book is written in textbook style, with no effort at embellishment, and no attempt to introduce so-called human interest features. The book was not written for entertainment, but to supply a broad outline of the structures of the body, and of the mechanisms by which its functions are performed. It is sketchy, of necessity, but it was written for those who want a composite picture of all phases of human biology, showing the important facts in their relations to each other.

Some scientific equipment is necessary to read the book with any understanding, and the minimum prerequisites would seem to be zoölogy and organic chemistry. It is impossible to make easy the understanding of a complicated and difficult subject. As indicated previously a few errors have crept into the text, examples of which are listed below.

Page 43, "if milk suger is ingested . . . it is practically left intact." This is not in accord with experimental evidence. Page 58, "ammonium" is used as a noun. Current usage would make it read ammonium hydroxide. Page 133, "obviously the representatives of life do not follow the second law of thermo-dynamics." This would deny that the earth receives energy from the sun. Page 147, "The exact composition of the fat is a characteristic for each species." This statement is usually true, but it does not apply to swine. Page 179, "The addition of charcoal (to water) may bring about a reduction in total volume of as much as 25 per cent." The reviewer was unable to verify this statement. Page 193, "Air contains approximately 140 gamma of iodine per liter." The reviewer believes such an amount would be distinctly visible, and highly toxic. The statement could not be verified. Page 219, "The neutral sodium phosphate, Na_2HPO_4 . . . ." The titration curve of a 0.1 M solution of phosphoric acid indicates that the pH of the di-sodium salt is over 9, decidedly alkaline. Page 271, the discussion of vitamin D contains no intimation that ergosterol is not the only provitamin D.

In connection with the discussion of obesity on page 132, the author deprecates attempts to remedy the condition before the cause is established. Everyday experience indicates that it may be inadvisable to wait that long.

A. G. HOGAN

American Foundations for Social Welfare—*Compiled by Russell Sage Foundation Library, Bertha F. Hulseman, Librarian. New York: Russell Sage Foundation,* 1938. 66 pp. Price, $.50.

This pamphlet lists 157 foundations interested in promoting social welfare, giving information as to how they came to be established, the amount of money involved, the purposes they are designed to serve, and the names of executive officers. In addition 31 community trusts are listed. The foundations are listed alphabetically and according to their principal interest. The pamphlet has been revised as of April, 1938, and should be of value to anybody interested in a particular foundation as well as to those who wish to find out what foundations are active in any special field, such as regional planning or eugenics.

CATHERINE GROVES PEELE

Das **Leben der Frau**—*By Bruno Gebhard, M.D. Stuttgart: Union Deutsche Verlagsgesellschaft,* 1937. 232 pp., 107 ill. Price, $5.00.

From the pen of a well recognized leader of those who are attempting to guide the public through the maze of modern scientific knowledge it is not surprising that this volume is an unusually straightforward, readable, and simple account of the problems of women from puberty to old age. Dr. Gebhard, known chiefly to American public health workers for his contributions to the German Hygiene Museum in Dresden and now as a consultant to the New York World's Fair Committee, has proved himself to be proficient in presenting facts by the printed word as well as by the exhibit. His use of the visual method has nevertheless added greatly to the attractiveness of the present volume in supplying 107 graphs, diagrams, photographs, and drawings—a most interesting collection.

The subject material covered is varied—anatomy, physiology, psychology, sociology, religious attitudes, political movements and how they may influence the development, status and rôle of the woman of today. Courtship, marriage, divorce, menstruation, pregnancy, motherhood, care of children, menopause, the unmarried woman—all are discussed frankly and simply—in terms which any woman should understand and from a point of view which does not isolate her but links her effectively to all phases of modern life.

The author has chosen from the many theories of the day a sensible one which will satisfy the needs of the woman who wishes to know what modern science seems to know about her.

The scientific reader will probably wish that Dr. Gebhard had somewhere tucked in a bibliography—or at least given the sources for some of his interesting statistics—but let him be content to learn how to state his facts lucidly and, if his German is not very fluent, be happy that Dr. Gebhard has not written that language in a style which is difficult for English readers.

LEONA BAUMGARTNER

Successful Living—*By W. Béran Wolfe. New York: Farrar & Rinehart,* 1938. 180 pp. Price, $2.00.

Human beings, contends Dr. Wolfe, may be the "captains of their souls" so far as happiness is concerned; even the blows of destiny are alleviated through a correct psychological approach to the problems involved. By means of an ingenious illustration termed the "Wheel of Life," one quickly learns (or suspects) that he is infantile, adolescent, or mature in outlook; average or superior in intelligence. Then, through the author's stimulating suggestions, one can work out his own problems which may involve social maturity, leisure time, sex, education, health, religion, dress, politics, culture, vital philosophy, self esteem, marital and family relationships, failure, etc. The result may convince one that what is laid to cruel and heartless destiny, may originate in one's own ignorance and lack of coöperation.

Thus, we may either "muddle through," which for the author is a matter of accepting life as it is—suffering when it is hard, enjoying it when it is pleasant, meeting or evading difficulties when they appear—or we may become more objective in our relationships. He grants that a completely objective human being does not exist, except as a really great hero, but this, of course, is no excuse for attempting to evade the adjustments forced on us by the compulsion of intelligence.

This book is to be recommended as a good investment, at least as an adjunct for mental pruning equipment, and it is of a high degree of useability for men and women in active life.

N. M. GRIER

Swimming and Diving—*By American Red Cross. Philadelphia: Blakiston's,* 1938. 271 pp. Price, $.60.

Following a brief history of swimming and the development of different styles of swimming, this text discusses in turn learning how to swim, covering such factors as floating, turning, and stroking, and then takes up the elements of swimming, discussing the technics of various styles and strokes. Each type of stroke is described in considerable detail. About one-third of the text is devoted to the history, style, and technic of diving.

This is an excellent text. The various procedures are carefully described in an interesting manner. Numerous illustrations add to its value. It might well be a part of the library of any instructor in physical education whether or not actually engaged in the teaching of swimming.

CHARLES H. KEENE

BOOKS RECEIVED

PUBLIC HEALTH ADMINISTRATION IN MARYLAND. Maryland State Planning Commission. Baltimore: Maryland State Planning Commission, 1938. 153 pp. Price, $1.00.

APPERTIZING OR THE ART OF CANNING: ITS HISTORY AND DEVELOPMENT. By A. W. Bitting. New York: The Glass Packer, 1937. 857 pp. Price, $7.00.

THE ETIOLOGY OF TRACHOMA. By Louis A. Julianelle. New York: Commonwealth Fund, 1938. 248 pp. Price, $3.25.

AIR CONDITIONING FOR COMFORT. By Samuel R. Lewis. Chicago: Keeney Publishing Co., 1938. 285 pp. Price, $2.50.

LILLIAN WALD. NEIGHBOR AND CRUSADER. By R. L. Duffus. New York: Macmillan, 1938. 371 pp. Price, $3.50.

REFERENCE HANDBOOK FOR NURSES. By Helen F. Hansen. Philadelphia: Saunders, 1938. 347 pp. Price, $1.50.

YOU AND YOUR HOSPITALS. By Ryllis Alexander Goslin and Omar Pancoast Goslin. New York: United Hospital Fund. 59 pp.

HOUSING YEARBOOK 1938. By Coleman Woodbury, Editor. Chicago: Public Administration Service, 1938. 315 pp. Price, $3.00.

SLEEP! THE SECRET OF GREATER POWER AND ACHIEVEMENT. By Ray Giles. Indianapolis: Bobbs-Merrill, 1938. 290 pp. Price, $1.75.

HEALTH, HYGIENE AND HOOEY. By W. W. Bauer. Indianapolis: Bobbs-Merrill, 1938. 322 pp. Price, $2.50.

NUTRITION AND DIET THERAPY. A Textbook of Dietetics. By Fairfax T. Proudfit. (7th ed.) New York: Macmillan, 1938. 923 pp. Price, $3.00.

PUBLIC WELFARE IN TRANSITION. Department of Public Welfare Annual Report for the Year 1937. William Hodson, Commissioner. 1938. 132 pp.

PEDIATRIC NURSING. By M. Corinne Bancroft, Elizabeth Pierce and Bessie Cutler. (3d ed.) New York: Macmillan, 1938. 652 pp. Price, $3.00.

A TEXTBOOK OF MEDICAL BACTERIOLOGY. By David L. Belding and Alice T. Marston. New York: Appleton, 1938. 592 pp. Price, $5.00.

HOW TO MAKE GOOD MOVIES. Rochester, N. Y.: Eastman Kodak Company, 1938. Price, $2.00.

LAWS RE. SANITIZATION: REGULATORY MEASURES CONCERNING THE SANITIZATION OF EATING AND DRINKING UTENSILS IN PUBLIC PLACES. Published by The Public Health Committee of the Cup and Container Institute, 30 Rockefeller Plaza, New York, N. Y., 1938. 39 pp.

SANITIZATION OF THE DRINKING GLASS. PART ONE, METHODS AND PROCEDURES—by Jack G. Baker. PART TWO, PRACTICAL CONTROL—by Raymond V. Stone, D.V.M. Published by the National Association of Sanitarians, Inc., 678 South Ferris Avenue, Los Angeles, Calif., 1938. 60 pp.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

State Medicine Bogey Interred—Editorializing upon the twenty-five year progress of health insurance in Great Britain, the gains in people covered and stability of finances are enumerated. Another important step is the provision of postgraduate training of insurance doctors. Despite the fear that health insurance would degrade medical practice, experience has shown it to have the opposite effect. Increase in drug prescribing is decried.

ANON. The Progress in Health Insurance. Lancet. 2, 8:439 (Aug. 20), 1938.

Why Women Worry—If we are to believe the picture drawn by this British gynecologist, the average woman's life must be pretty dreadful. In adolescence she suffers from fears and disappointments; her business career may be difficult and unhygienic; her childbearing may leave impaired sex organs because postnatal supervision is often neglected or superficial; menopause brings new grief: infirmities of old age close this gloomy picture.

BOURNE, A. Influences Which Undermine the Health of Women. J. Roy. San. Inst. 1, 12:705 (Sept.), 1938.

Cheers for Engineers—After recounting the contributions of the engineer to public health in the usual fields of accident prevention, public sanitation, housing and nutrition, the author points to the still greater contributions that engineers may make. Worry, he says, has wrecked more lives than tuberculosis has. Economic insecurity is the great cause of worry. More stable industry, which engineers will some day effect, will cure the condition.

DAVIS, H. N. Engineering and Health. Sci. Month. Oct., 1938, p. 328.

Mind Over Matter Department—These researchers gave some "cold-susceptible" students cold vaccines; to others they gave injections of saline, but let them think they were getting vaccine. You have guessed it! Both groups were helped greatly and about equally. Some who received the saline were helped so much, in fact, that they went the next season to the family physician for repeat "vaccine" treatments.

DIEHL, H. S., *et al.* Cold Vaccines. J.A.M.A. 111, 13:1168 (Sept. 24), 1938.

For the First Time, a National Health Program—Good reporting that catches the spirit of the recent National Health Conference held in Washington, which found public health services grossly insufficient, institutional facilities inadequate, a third of the population receiving little or no medical care, and even more Americans suffering from burdens created by illness.

HALL, H., and KELLOGG, P. The Unserved Millions. Survey Graphic. 27, 9:437 (Sept.), 1938.

Drinking Drivers Cause Accidents—Interesting research is reported in the field of drinking and driving. If you are carrying the equivalent of 0.5 parts of alcohol per thousand or less in your blood, you are not more likely to cause an accident than if you had not had a drink. Greater concentration of alcohol increases your liability to driving accidents. Most drinking-driving occurs in the wee small hours, especially at the

week-end, and alcohol is a major cause of automobile accidents.

HOLCOMB, R. L. Alcohol in Relation to Traffic Accidents. J.A.M.A. 111, 12:1076 (Sept. 17), 1938.

Milk for Premies—How 4,000 quarts of breast milk were procured, pasteurized, preserved, and dispensed in New York City. Statistics about the other nine municipal milk stations are given. If human milk were everywhere available, it is suggested that most premature baby deaths could be prevented.

LAWS, C. H., and SKELLEY, E. G. A Maternal Milk Laboratory. Am. J. Nurs. 38, 8:859 (Aug.), 1938.

Toward the Control of Cancer—Evidence of the value of the Massachusetts cancer program is found in the reduction of the adjusted cancer death rate for women which has taken place since the project started; in the lessening of the average time between first symptoms and the institution of treatment, and the marked increase in the number of physicians using the diagnostic services.

MACDONALD, E. J. The Evolution of Cancer Control in Massachusetts. Med. Woman's J. 65, 9:264 (Sept.), 1938.

Pediatricians Please Note—If cow's milk disagrees with the baby, try adding dehydrated apple to the formula; less hydrochloric acid is needed and a soft curd is assured.

REITHEL, F. J., and MANVILLE, I. A. Advantages of Adding Apple to Milk Formulas. Am. J. Dis. Child. 56, 2:235 (Aug.), 1938.

When Pregnancy Complicates Tuberculosis—At least 30,000 tuberculous women become pregnant every year. What to do about them? Mostly it depends upon the condition of the mother, the facilities for prenatal care, the disposition of the baby. The prospect isn't a pretty picture, for a third of the mothers die within a year of delivery; good obstetrical care, or therapeutic abortion could improve the situation.

SKILLER, J., and BOGEN, E. Pregnancy and Tuberculosis. J.A.M.A. 111, 13:1153 (Sept. 24), 1938.

Neonatal Deaths—Reviewing the cause of death of all the children who died among those born in New York State in 1936, it was found that the first-born and those high in order of birth had a higher neonatal mortality than the "in-betweens." More than half the neonatal deaths were among "premies," the rate being twenty-five times as high as among full-term infants. Boy babies had a higher neonatal mortality than girls, and very young or old mothers had more trouble in this regard and in the matter of stillbirths than those between twenty and thirty years. The age of the father, too, influenced neonatal mortality. Conclusion jumpers will find this article much to their liking.

YERUSHALMY, J. Neonatal Mortality by Order of Birth and Age of Parents. Am. J. Hyg. 28, 2:244 (Sept.), 1938.

ASSOCIATION NEWS

OFFICERS, 1938–1939

President, ABEL WOLMAN, DR.ENG., Baltimore, Md.
President-elect, EDWARD S. GODFREY, JR., M.D., Albany, N. Y.
First Vice-President, A. GRANT FLEMING, M.D., D.P.H., Montreal, Que., Canada
Second Vice-President, LEONIDES ANDREU ALMAZAN, M.D., Mexico City, D. F., Mexico
Third Vice-President, EDWIN H. SCHORER, M.D., DR.P.H., Kansas City, Mo.
Treasurer, LOUIS I. DUBLIN, PH.D., New York, N. Y.
Executive Secretary, REGINALD M. ATWATER, M.D., DR.P.H., New York, N. Y.
Chairman of Executive Board, JOHN A. FERRELL, M.D., DR.P.H., New York, N. Y.

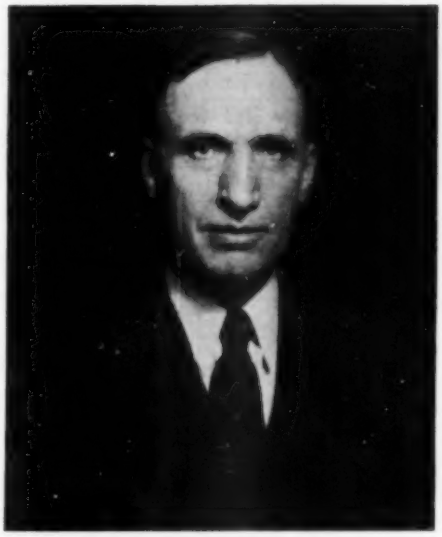
The Annual Meeting in 1939 will be held in Pittsburgh, Pa.

Sedgwick Memorial Medal Awarded Wade Hampton Frost, M.D.

ON behalf of the Sedgwick Memorial Medal Committee, the following announcement was made by Dr. Haven Emerson at a General Session of the American Public Health Association meeting at Kansas City on October 25.

"The Sedgwick Memorial Medal, awarded in 1938 to Dr. Wade Hampton Frost, was given to him in Baltimore on April 11 through the hands of his wife. Swift and irreparable disease which soon after took Dr. Frost upon his last journey deprived us of that opportunity to express in his presence the full measure of our respect and affection for him, to which this moment in our proceedings is devoted.

"Born as it were in the midst of medical practice, and fortunate in the foundations in his chosen profession, his gifts of character and intellect combined with the instincts of the scholar to mark his work and influence with distinction.



Wade Hampton Frost, M.D.

"His rigorous honesty of approach and a fine scorn for any other facts than those of enduring worth, drew to him students and colleagues who cherished

the gentle persuasiveness and the judicious encouragement of his helpful criticism. His readiness to lose himself in looking through and beyond the problems of all who came seeking the generosity of his attention was notable.

"While his illuminating contributions in the fields of poliomyelitis, influenza, diphtheria, and tuberculosis stand high among the classics of epidemiology, perhaps his planning, direction, and scientific guidance of the stream pollution laboratory at Cincinnati will prove to have been his most abundant legacy to the expanding fields of the theory and practice of public health.

"And yet the breadth of influence which was his can be measured best by other products than his publications or his administrative services, pregnant as these were with creations of his thought and industry.

"As the spirit of Sedgwick carries along now in the second generation a strong current of pure biology and applied sanitation through the lives of his former students and their disciples, so we have here among us, and know in many a foreign land, of the army of young men and women whose thoughts have been made broader, yet more precise, and whose hearts have been touched by the warm nobility, and their lives by the distinctive superiorities of mind and manner of Wade Hampton Frost.

"He all but created for this country, and our generation of servants of the public health, the scientific discipline and the productive study of epidemiology. He inevitably, and all but unconsciously, put every member and Fellow of our Association under permanent obligation for the clarity of his thought and the beautiful simplicity and directness of expression with which he clothed the studies he made and the conclusions he wisely drew from them.

"We should each add honor to our respective profession and keep alive among our successors at least part of the lives of Sedgwick and Frost if we could capture and use in our own days' work some of their rare and precious qualities.

"Integrity of purpose and method in all his work, intellectual power of rare and extensive scope, a pervading courtesy in every human relationship—for these alone of his many fine qualities Dr. Frost will be remembered with enduring affection by all who knew him personally or only by his written words."

Statement of Dr. Leonides Andreu Almazan, Director of Public Health, Federal Department of Health, Mexico City, D. F., for presentation at the Second General Session of the Sixty-seventh Annual Meeting of the A. P. H. A., October 27, 1938

IT is indeed a great honor for the public health authorities of Mexico to have received the gracious invitation of the American Public Health Association to attend this convention, and I beg to convey to you the cordial greetings of President Lazaro Cardenas and of my colleagues and collaborators of the Public Health Services of Mexico.

One of my collaborators will explain to you in detail, at some opportune moment, the different activities and advancements made in public health and sanitation in Mexico by the Federal Health Department under my direction.

For the moment, I wish to report our grateful appreciation of the helpful cooperation which the Rockefeller Foun-

dation has extended to Mexico in public health problems and in granting fellowships in the universities of the United States for the training of health personnel—health officers, sanitary engineers, and public health nurses—as well as in detailing to Mexico its representatives, Drs. Bailey and Earle, to coöperate with the Mexican Government in dealing with its health problems. I wish to express my sincere and grateful appreciation and also that of my government to this philanthropic Foundation for its valuable coöperation in improving the well-being and prosperity of my country.

As to the most important activities of our program for the coming year, I might mention

1. The improvement of existing potable water supply systems and creation of new systems in as many rural areas as possible, aiming to reduce the mortality due to water-borne diseases.

2. Increasing the campaign for the relief and control of malaria, a disease which causes a great deal of illness in Mexico, and for which there will be appropriated the sum of three million pesos.

3. Creating a tuberculosis consciousness in the entire country and intensifying and coördinating our activities for the relief of this plague. Organizing a committee to solicit private coöperation to aid the official agencies.

4. We are giving consideration and sympathetic aid to this great country in the campaign for the control of narcotics and addicts and in preventing criminal activities resulting from smuggling of narcotics into the United States.

In conclusion, I wish to convey to the American Public Health Association my sincere hope that this convention may be most successful in its efforts for the benefit of mankind the world over.

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Robert J. Alexander, M.D., 2033 S. State St., Salt Lake City, Utah, County Physician

Norman G. Angstadt, M.D., New Martinsville, W. Va., Director, Wetzel County Health Dept.

Charles H. Bondurant, M.D., Wytheville, Va., Wythe County Health Officer

A. Frank Brewer, M.D., C.P.H., Solano County Health Dept., Fairfield, Calif., Director

Watkins A. Broyles, M.D., Bethany, Mo., Deputy State Commissioner of Health

Wallace E. Childs, M.D., M.P.H., 226 W. Broadway, Princeton, Ind., Director, District Health Dept. No. 1, State Board of Health

James O. Hood, M.D., 420 E. Keith, Norman, Okla., Director, Cleveland County Public Health Unit

William C. Hunsicker, M.D., 1625 Race, Philadelphia, Pa., Director, Dept. of Public Health

Samuel B. Johnson, M.D., Box A, Franklin, W. Va., Pendleton County Health Officer

Henry W. Kassel, M.D., City Hall, Kansas City, Kans., Assistant Director of Health

E. E. McDaniel, D.O., Cassville, Mo., County Physician

Carlos M. Patterne, Dept. de Sanidad, Mayaguez, P. R., Chief Inspector

Elihu F. Sloan, M.D., Columbiana, Ala., Shelby County Health Officer

Lawrence C. Snow, M.D., Medical Arts Bldg., Salt Lake City, Utah, Assistant County Physician

Thomas G. Ward, M.D., St. Joseph, La., Director, Tensas Parish Health Unit

Burton L. Zinnamon, M.D., Sonoma County Health Dept., Santa Rosa, Calif., Health Officer

Laboratory Section

Alonzo T. Barrett, 2534 Brinker Ave., Ogden, Utah, City Bacteriologist

Parker R. Beamer, 362 Chemistry Building,

Urbana, Ill., Bacteriology teacher, University of Illinois

Thelma E. DeShazo, 412 E. 5th, Austin, Tex., Field technician, State Dept. of Health

Justus Goslau, M.D., Cedar Grove, N. J., Chemist and Bacteriologist, Division of Water (Newark)

Gertrude McGrath, 1030 Rowland Ave., Kansas City, Kans., City technician

William M. Moody, M.D., 2109 Clifton Ave., Cincinnati, O., Bacteriologist, Health Dept.

Hildrus A. Poindexter, M.D., Ph.D., Howard University, School of Med., Washington, D. C., Professor of Bacteriology, Preventive Medicine and Public Health

Dorothy Rodgers, 410 E. Capital Ave., Jefferson City, Mo., Laboratory technician, State Dept. of Health

Lila E. Suiter, Santa Maria Hospital, Santa Maria, Calif., Bacteriologist and Laboratory technician

Vital Statistics Section

Henry W. Gibbons, M.D., 930 J St., Sacramento, Calif., Medical Director, California Western States Life Ins. Co.

Claud C. Ham, 603 Decatur N.W., Washington, D. C., Associate Statistician, Social Security Board

Elizabeth H. Pitney, Yale School of Medicine, New Haven, Conn., Graduate Student, Dept. of Public Health

David M. Wolfe, M.D., C.P.H., State Dept. of Health, Atlanta, Ga., Assistant Director, Bureau of Vital Statistics

Public Health Engineering Section

Frederick A. Brown, Los Lunas, N. Mex., District Sanitarian, State Dept. of Public Health

Paul D. Haney, State Board of Health, Lawrence, Kans., Chemical Engineer, Div. of Sanitation

George K. Hendrix, Box 161, Carbondale, Ill., Sanitary Engineer, State Dept. of Public Health

Arthur D. Jackson, Jr., Lee County Health Dept., Jonesville, Va., Sanitation Officer

James M. Jarrett, State Board of Health, Raleigh, N. C., Consultant in Sanitary Engineering

Benedict A. Lacombe, Echo, La., Sanitary Inspector, Desota Health Unit

Paul Lange, 812 Grove St., Emporia, Kans., Sanitarian, Lyon County Health Dept.

Maurice LeBosquet, Jr., 816 New Post Office Building, Chicago, Ill., Associate Public Health Engineer, U. S. Public Health Service

Felix C. Pickron, P. O. Box 88, Damascus, Ga., Assistant District Supervisor, U. S. Public Health Service

Blucher A. Poole, 201 State House Annex, Indianapolis, Ind., Chief Engineer, State Board of Health

Abram Pratt, 823 McVicar Ave., Topeka, Kans., District Supervisor, U. S. Public Health Service

Clement L. Richardson, State Board of Health, Jacksonville, Fla., State Shellfish Inspector

Milo R. Simmonds, Antlers, Okla., Assistant Sanitary Engineer, State Dept. of Health

Industrial Hygiene Section

Beatrice Mintz, M.D., 27 W. 96 St., New York, N. Y., Associate Industrial Hygiene Physician, Division of Women in Industry, New York State Labor Dept.

Kenneth M. Morse, 1800 Fillmore, Chicago, Ill., Industrial Hygiene Engineer, State Dept. of Public Health

Harold H. Steinberg, M.D., 3907 W. Gladys Ave., Chicago, Ill., Industrial Hygiene Physician, State Dept. of Public Health

Food and Nutrition Section

Glenn E. Merrill, Dept. of Public Welfare, Wichita, Kans., Chief Milk Inspector

Child Hygiene Section

Gertrude E. Cromwell, Room 10, City Hall, Des Moines, Ia., Supervisor, Health Education and School Nursing, Public Schools

Bess W. LeFevre, 132 E. Como St., Columbus, O., Nursing Consultant, State Dept. of Health

Vernon W. Lippard, M.D., 303 Ninth Ave., New York, N. Y., Director, Commission for Study of Crippled Children

Roland H. Loder, M.D., 1003 State Capitol Bldg., Lincoln, Nebr., Director, Division of Maternal and Child Health, State Dept. of Health

Katherine M. Schweikart, Cambrian Hotel, Jackson, O., Field Nursing Consultant, State Dept. of Health

Public Health Education Section

Adelbert B. Allen, M.D., Piermont Ave., Piermont, N. Y., Taking Health Officers Extension Course

Abe E. Bath, Natchitoches, La., District Supervisor, U. S. Public Health Service

Archie W. French, 2203 Devonshire, Houston, Tex., Director, Health Education, University of Houston

Rosamond A. Losh, 1020 McGee, Kansas City, Mo., Executive Secretary, Kansas City Children's Bureau

Fannie B. Nelken, State Board of Health, New Orleans, La., Secretary

James H. Ready, M.D., 1501 Locust St., St. Louis, Mo., Medical Director, General American Life Insurance Co.

James S. Rollins, Providence Rd., Columbia, Mo., Director, Health Education

Elton B. Scallan, St. Joseph, La., Sanitary Inspector

Gordon H. Seger, Oak Grove School, Administration Building, Flint, Mich., Health Education Director, Public Schools

Ethel L. Sherman, Box 205A, Boulder, Colo., School Nurse, Burlington Independent School District

Savilla M. Simons, 844 Rush St., Chicago, Ill., Executive Director, Douglas Smith Fund

Thelma Suggett, State Dept. of Education, Jefferson City, Mo., Supervisor of School Health Education

Public Health Nursing Section

Eunice R. Anderson, R.N., Box 145, Palmer, Alaska, Public Health Nurse, Maternal and Child Health Division, Territorial Dept. of Health

Eddy L. Coleman, R.N., Box 474, St. Joseph, La., Public Health Nurse, State Board of Health

Irene Courter, 1600 Clay St., Topeka, Kans., Staff Nurse, Board of Health

Elsie Crosby, State Dept. of Health, Atlanta, Ga., Assistant Director, Division of Public Health Nursing

Mary A. Dean, Tensas Parish Health Unit, St. Joseph, La., Public Health Nurse

Dorothy Deane, R.N., Richland, Mo., Public Health Nurse, Pulaski County

Vivian A. DeLaune, Napoleonville, La., Advisory Nurse, Bureau of Parish Health Administration

Clara W. Dewhirst, C.P.H., Bolivar, Mo., Polk County Public Health Nurse

Mabel L. Francis, 313 Civil Court Building, New Orleans, La., District Midwife Supervisor, Bureau of Parish Health Administration

Clara V. Hahn, 4301 North Ave., Richmond, Va., Director, Public Health Nursing Course, Medical College of Virginia

Mabel Hammarlund, R.N., 115 N. Elmwood, Topeka, Kans., Contagion Nurse, Board of Health

Raphael E. Heyburn, C.P.H., 3637 Broadway, Kansas City, Mo., Supervisor, Jackson County Health Dept.

Louise Kincaid, State Board of Health, Jacksonville, Fla., State Maternal and Child Welfare Nurse

Alice Kirby, R.N., 808 N. 10 St., Kansas City, Kans., Venereal Disease Nurse, Health Dept.

Nell M. Landry, R.N., Napoleonville, La., Nurse, Assumption Parish Health Unit

Elvena D. Laurent, Lake Providence, La., Public Health Nurse, East Carroll Parish Health Unit

Myrtle W. Martin, Civil Courts Building, New Orleans, La., Supervisor and Historian, Traveling Chest Clinic, Division of Tuberculosis Control, Bureau of Parish Health Administration

Minnie McEvoy, 1221 Quindaro Blvd., Kansas City, Kans., Chief Nurse, Health Dept.

Herma W. McMahon, 721 Maine St., Lawrence, Kans., Red Cross Public Health Nurse, Douglas County

Marie M. Meyer, R.N., District Health Office, Cameron, Mo., Public Health Nurse

Anna E. Miser, R.N., 1101 Congress, Emporia, Kans., Lyon County Public Health Nurse

Marion E. S. Nicholson, R.N., 2604 Minnesota Ave., Kansas City, Kans., School Nurse, Board of Education

Anne Poore, R.N., 14 City Hall, Des Moines, Ia., Educational Director, Polk County Health Service

Rosemary Rieke, R.N., 912 Pacific, Kansas City, Kans., Staff Nurse, Board of Health

Louise Shoddan, State Dept. of Health, Oklahoma City, Okla., Advisory Nurse, Field Technical Unit

Herma T. P. Smith, Mansfield, La., Public Health Nurse, State Board of Health

Hazel Son, Kountze, Tex., Public Health Nurse, State Dept. of Health

Jessie F. Sorrells, R.N., Clinton, Ark., Public Health Nurse, State Board of Health

Bernardine E. Striegel, R.N., Welfare Div., Metropolitan Life Insurance Co., 1 Madison Ave., New York, N. Y., Territorial Supervisor

Sarah A. Switzer, Wood County Health Dept., Parkersburg, W. Va., Staff Nurse

Madge Taylor, 949 College Ave., Topeka, Kans., Nurse, Health Dept.

Mildred R. Underwood, 701 Front St., Fairmont, W. Va., Mineral County Health Nurse

Epidemiology Section

Joseph Birnbaum, M.D., 260 West End Ave., New York, N. Y., Medical School Inspector, Dept. of Health

Reuben A. Brown, M.D., 223 Civil Courts Building, New Orleans, La., Director, Division of Tuberculosis Control, State Dept. of Health

Alwin M. Clarkson, M.D., C.P.H., State Dept. of Health, Austin, Tex., Director, Venereal Disease Control

John R. Heller, Jr., M.D., U. S. Marine Hospital, New Orleans, La., Passed Assistant Surgeon, U. S. Public Health Service

Thaddeus M. Koppa, M.D., C.P.H., 1015 E. 21 St., Cheyenne, Wyo., Director, Division of Epidemiology, State Board of Health

Raymond G. Plummer, M.D., Franklin County Tuberculosis Hospital, Columbus, O., Assistant Superintendent

Helen A. Tate, R.N., Box 175, Pauls Valley, Okla., District Nurse

Unaffiliated

Malcolm O. Austin, M.D., 605 Market St., San Francisco, Calif., Medical Director, West Coast Life Insurance Co.

William E. Braisted, M.D., College of Chinese Cultural Studies, Peiping, China

Benjamin F. Byrd, M.D., 303–7 Ave. N., Nashville, Tenn., Assistant Medical Director, National Life and Accident Insurance Co.

Alexander H. Jones, Central Experimental Farm, Ottawa, Ont., Canada, Graduate Assistant in Bacteriology, Division of Bacteriology, Dept. of Agriculture

Douglas A. Meredith, D.D.S., 314 Brotherhood Bldg., Kansas City, Kans., Dentist, Health Dept.

Alexander E. Murphy, D.D.S., 526 E. Capitol Ave., Jefferson City, Mo., Dentist, State Dept. of Health

Howard Workman, M.D., Hermann, Mo.

CORRECTED IDENTIFICATION OF MOSQUITO IN CHINA CLIPPER

IN our issue of September, 1938, page 1117, we stated that "In August, 1937, a living *Anopheles maculipennis* was found in a Chinese Clipper arriving at Honolulu from Alameda, Calif." This was taken from an official report by Surgeon General Hugh S. Cumming to the Permanent Committee of the Office International d'Hygiene Publique in March, 1938. We have just received a letter from Harold Farnsworth Gray, Engineer and Executive Officer of the Alameda County Mosquito Abatement District, Oakland, Calif., saying that this specimen was sent to the National Museum in Washington, D. C., and authoritatively identified as being *Theobaldia incidens*.

PUBLICATION NEEDED

THE Association stock of the January, 1938, issue of the *American Journal of Public Health* is exhausted. The Association office will gladly pay postage on any copies which members or subscribers can supply. Address: 50 West 50th Street, New York, N. Y.

EMPLOYMENT SERVICE

The Employment Service will register persons qualified in the public health field without charge. Public health nurses are registered with the Nurse Placement Service, 8 South Michigan Avenue, Chicago, Ill., with which the Association coöperates.

Replies to these advertisements, indicating clearly the key number on the envelope, should be addressed to the American Public Health Association, 50 W. 50 Street, New York, N. Y.

Positions Wanted

HEALTH OFFICERS

Physician, M.D., Class A medical school; M.P.H., Harvard School of Public Health; extensive experience in pediatrics and school medical services; also background of county health administration and teaching in medical school, will consider expanded opportunity in teaching or research. **A302**

Physician, with Dr.P.H. degree from Yale, now employed by state department of health, will consider position in general health administration, in infant welfare or in epidemiology. **A300**

Experienced physician, administrator, epidemiologist and teacher, now employed, with C.P.H. from Johns Hopkins, and 14 years' public health background, will consider position. Prefers epidemiology in city or state department. Excellent references. **A355**

Physician, M.D., University of Virginia; excellent background, seeks position as health officer in well organized health department. **A388**

Physician, M.D., Class A medical school; M.S.P.H., University of Michigan, 1937; now serving as district state health officer, seeks full-time administrative position in city or county. **A367**

Physician, experienced in health administration of cities and states, will consider attractive opening in maternal and child health or health education. **A343**

Well qualified physician, with C.P.H. from Johns Hopkins; experienced as school physician and in college teaching, will consider city or county administrative position or teaching and student health service. **A383**

Physician, M.D., University of Cincinnati; with post-graduate training in venereal disease control, Johns Hopkins; now employed, is available as venereal disease control officer. **A363**

Physician, M.D., C.P.H., two years' experience as district health officer; anxious to do venereal disease control work or epidemiology. **A345**

Physician, M.D., A.B., 30 years city health department. Administrative, educational and research experience; also familiar with venereal disease work. **A295**

Physician, age 34; M.D., University of Wisconsin; M.P.H., Harvard; specializing in industrial hygiene, will consider general administration. **A342**

Physician with Dr.P.H. degree, experienced as a local health officer, in present position since 1929, will consider opening. **A386**

HEALTH EDUCATION

Well qualified woman in health education wishes position as health coördinator or health counselor. Has wide experience, and Ph.D. from New York University. **H236**

Young woman, M.A., Health Education, Teachers College, Columbia University; with splendid international experience, seeks position as director of health education with preference for New York City. **H369**

Young woman, M.S.P.H., University of Michigan, experienced in laboratory research and health education, is available for research or investigative work. **H303**

Woman, M.D., Boston University; special work Columbia and Massachusetts Institute of Technology; one year's experience in state hospital; interested in psychiatry, desires position in the east in hospital for mental diseases or industrial school. **H247**

MATERNAL AND CHILD HEALTH

Woman physician, graduate of University of Iowa, who has directed state bureau of maternal and child health, now employed, will consider another position. **C318**

Woman physician, with excellent medical training and background of public health nursing experience, seeks position in maternity and infancy work. **C376**

(Continued on page 1364)

LABORATORY

Bacteriologist and pathologist with wide administrative experience; Ph.D., Brown University; will consider leading position in this field. **L371**

Experienced laboratory director with background of dairy products manufacture and research in control methods; University of Wisconsin, M.S. and Ph.D.; desires administrative position with food manufacturing or processing industry, or association with health department doing routine and research work in food control. **L381**

Capable research worker, Ph.D., trained at University of Southern California, seeks position directing laboratory, in research work or field investigation. Has taught bacteriology, directed state hygienic laboratory and hospital laboratories. **L315**

Young woman, A.B., Bates College; several years' experience in various state laboratories, desires position as bacteriologist. **L253**

Bacteriologist with training at C. C. N. Y., N. Y. U. and Cornell Medical College, wishes laboratory position in bacteriology; east or southwest. **M351**

Young woman, A.B., major in bacteriology; nine years' experience; now employed in a clinical laboratory; desires position in bacteriology or serology in a health department laboratory or in research. **L382**

Laboratory technician; B.Sc. degree; with experience in Army, state public health laboratory, and U. S. Public Health Service field laboratory, seeks position in medical school or university. **L379**

Bacteriologist and serologist, A.B., University of Kansas; at present bacteriologist in charge, public health laboratory; will consider another position. **L390**

SANITARY ENGINEERING

Graduate sanitary engineer with service under U.S.P.H.S. and state departments of health, especially interested in filtration plant design and operation and shellfish sanitation, seeks employment. **E356**

Sanitary Engineer, courses at Rutgers University, with 17 years' experience in design, research and construction of water and sewage plants, as well as aerial pollution surveys, desires position, preferably research. **E321**

Public health engineer, B.S. in Sanitary Engineering from Massachusetts Institute of Technology, experienced in Massachusetts, Connecticut and Kentucky, seeks position as sanitary or public health engineer with health department. **E380**

Experienced sanitary engineer, graduate of Massachusetts Institute of Technology, seeks responsible position. **E372**

MISCELLANEOUS

Young man, age 27, S.B., Massachusetts Institute of Technology; A.M., Boston University; M.S. in Biochemistry, University of Michigan; 2 years' graduate work in public health; experienced in chemical, bacteriological and biochemical research; teaching experience in college hygiene, desires a position in a food industry involving research or control. **M374**

Physician, graduate of Johns Hopkins Medical School, and well qualified in medicine and tuberculosis, will consider a clinical position in the medical field. **M377**

Experienced teacher in bacteriology and public health, Ph.D., Cornell; now professor in Grade A medical school, will consider teaching, executive or administrative position. **M327**

Young woman, B.S. in Education, University of Pennsylvania; four years' experience in medical and vital statistical research; knowledge of typing and shorthand, desires position as statistical research assistant. Excellent references. **S389**

Dentist, graduate of Temple University, with excellent post-graduate experience, desires position in administrative aspects of dental hygiene. **M352**

Experienced public health nurse executive, Fellow A.P.H.A., is available for responsible position. **N384**

NEWS FROM THE FIELD

PUBLIC HEALTH FELLOWSHIP FOR WOMEN

THE American Association of University Women announces a public health fellowship for women.

The Mary Pemberton Nourse Memorial Fellowship in Public Health, of the value of $1,250, will be awarded for the academic year 1939–1940. Applications for this fellowship are due on December 15, 1938.

Women applying for the fellowship must possess a bachelor's degree or its equivalent. They must also have completed a minimum of either two years of graduate study tending toward public health work (for instance in such subjects as biology, chemistry, the medical sciences, economics, sociology), or two years of practical work in the field of public health. Preference will be given to those candidates who have completed two years of residence work for the doctorate or who have already received the degree.

The fellowship may be used for any work along the lines of public health work which shall be approved by the committee.

In the letter of application, the applicant for this fellowship must explain fully her conception of public health work. Correspondence should be addressed to: Secretary, Committee on Fellowship Awards, American Association of University Women, 1634 I Street, N.W., Washington, D. C.

NURSING INFORMATION BUREAU

THE Nursing Information Bureau of the American Nurses' Association, 50 West 50th Street, New York, N. Y., has issued two folders entitled "Wanted—A Real Nurse, an R.N.," and "Safe Nursing Care and Where To Ask for it." They discuss briefly the significance of the term "Registered Nurse" and suggest how to secure professional or other types of nursing service when needed. Any one may secure these folders from the Nursing Information Bureau.

NEW DEPARTMENT IN LOYOLA

EARL E. Kleinschmidt, M.D., Dr.P.H., the Director of the Department of Preventive Medicine, Public Health and Bacteriology at Loyola University School of Medicine, Chicago, has announced the establishment of a new Department offering courses leading to the Certificate and Bachelor of Science degree in Public Health Nursing, the Master's degree in Public Health for graduate students, courses in Preventive Medicine for medical students, and advanced Bacteriology. Associated with Dr. Kleinschmidt in the department will be John H. Bailey, M.D., recently with the University of Illinois Medical School; Dr. Klimek from the University of Michigan; Dr. Robert Lee, Associate in charge of Student Health Service; Margaret Cleary, and Mrs. M. Roessler, in charge of Public Health Nursing.

VOLUNTEER BLOOD DONORS BUREAU

THE Baltimore Red Cross has undertaken the establishment of a Transfusion Bureau aimed to supplement other facilities in the community and to supply the deficit in the transfusion requirements through the volunteer services of donors.

An outline of the provisions set up for Baltimore can be secured from Charles C. W. Judd, Director of the Blood Transfusion Bureau, 202 Guilford Avenue, Baltimore, Md.

PERSONALS

Central States

HARRY V. GIBSON, M.D.,† Health of the Eau Claire, Wis., County Health Unit, has been appointed Health Officer of Great Falls and Cascade County, Mont.

MINA B. GLASIER, M.D.,† of Bloomington, Wis., recently resigned as a member of the Wisconsin State Board of Health after 14 years of service. She served as President of the Board in 1935 and as Vice-President in 1937.

PERCY L. HARRIS, M.D.,† of Columbus, Ohio, a member of the staff of the Ohio State Department of Health, has been appointed Health Commissioner of Portage County, succeeding DR. ROLLIN D. WORDEN, resigned.

MILTON E. PARKER,* of the Beatrice Creamery Company, Chicago, Ill., has been appointed Director of the American Dairy Science Association for 3 years.

DR. HERMAN M. SOLOWAY, of Chicago, has been appointed Venereal Disease Control Officer of the Illinois State Department of Health. The newly created post was made possible by funds allotted to the state by the U. S. Public Health Service.

DR. ROLLIN D. WORDEN, of Ravenna, Ohio, resigned September 1 as Health Commissioner of Portage County.

Eastern States

THOMAS FRANCIS, JR., M.D.,† of the International Health Division of the Rockefeller Foundation in charge of research on influenza, has been appointed Professor of Bacteriology in the New York University College of Medicine.

DR. WILLIAM SHERMAN RANDALL has been appointed Health Officer of Shelton, Conn., to complete the unexpired term of the late DR. J. EUGENE BLACK.

Southern States

CHARLES H. BONDURANT, M.D.,† of Wytheville, Va., has been made Health Officer of Wythe County.

DR. LUTHER A. BRENDLE, of Clinton, Tenn., has been appointed Health Officer of Dodge County, succeeding DR. JOHNNIE L. GALLEMORE, of Eastman, resigned.

EDWIN CAMERON, M.D.,† of Baltimore, Md., has been appointed Health Officer of Monongalia County.

ROBERT L. CHERRY, M.D., C.P.H.,† of Kaufman, Tex., Director of the District 3 Health Unit of the Texas State Department of Health, has been appointed Health Officer of the Tyler-Smith County Health Unit, to succeed AUSTIN E. HILL, M.D.,† of Tyler.

CHADWICK W. CHRISTINE, M.D.,† of Louisville, Ky., has been appointed Health Officer of Mason County to succeed OLLIE M. GOODLOE, M.D., C.P.H.,† resigned.

ROBERT P. COOKE, M.D.,† of Lexington, Va., continues as Health Officer in the health unit formed as a result of the recent separation of Rockbridge County from the Alleghany-Botetourt-Rockbridge Health District to be joined in one unit with the City of Lexington.

DR. DAVID M. COWGILL,* of Madisonville, Tenn., Health Officer of Monroe County, has been appointed Director of the Giles County Health Unit, succeeding J. W. ERWIN, M.D.,† of Pulaski, who has been appointed in Washington County.

JAMES NICHOLAS DUDLEY, M.D.,† formerly of Eastville, Va., has been appointed Health Officer for the Farmville district, made up of Prince

---

* Fellow A.P.H.A.
† Member A.P.H.A.

Edward, Buckingham, and Nottoway Counties.

WILLIAM Y. GARRETT, M.D.,† of Raven, Va., has succeeded JAMES NICHOLAS DUDLEY, M.D.,† as Health Officer of Northampton County.

OLLIE M. GOODLOE, M.D., C.P.H.,† of Maysville, Ky., has resigned as Health Officer of Mason County, to become Field Director of the State Board of Health for Eastern Kentucky, with headquarters in Lexington.

JAMES H. GORDON, M.D.,† of Covington, Va., has been appointed Health Officer of the new district of Alleghany and Botetourt Counties.

DR. FERDINAND R. HASSLER, JR., formerly of Oklahoma City, Okla., has been appointed Director of a new city and county health unit in Muskogee and Muskogee County.

AUSTIN E. HILL, M.D.,† of Tyler, Tex., has been appointed Director of Communicable Diseases, Epidemiology, and Maternal and Child Health in the Health Department of Houston.

JAMES O. HOOD, M.D.,† of Norman, Okla., has been appointed Health Officer of Cleveland County to succeed GUY H. WILLIAMS, M.D.

ROBERT L. HUNTER, M.D.,† of Whitesville, W. Va., Health Officer of Boone County, has been placed in charge of a new Coal River District that includes Boone and Lincoln Counties.

DR. ROBERT R. KING, of Boone, N. C., has been appointed District Health Officer in a new district made up of Ashe, Alleghany, and Watauga Counties.

BOLIVAR J. LLOYD, M.D.,† of Washington, D. C., Medical Director, U. S. Public Health Service, retired, has been appointed Director of a recently organized health unit for Austin, and Travis County, Tex.

OTIS R. LYNCH, M.D.,† of Brandenburg, Ky., has resigned as Health Officer of Meade County, to enter private practice in Marengo, Ind.

HUGH C. MCREE, M.D.,† formerly Health Officer of Lee County and recently engaged in special work under the supervision of the Bureau of Preventable Diseases of the Alabama State Department of Health, has been appointed Health Officer of Marion County, effective September 15, succeeding THOMAS L. OWINGS, M.D., of Hamilton, resigned.

BENJAMIN O. MORRISON, M.D.,† of Abbeville, La., has been appointed Health Officer of Acadia Parish.

DR. WILLIAM BRUCE NELSON, of Fairfield, Ala., has been appointed Health Officer of Baldwin County, to succeed DR. ARTHUR J. VANDERGRIND, of Bay Minette, who has resigned to accept a commission in the U. S. Army Medical Corps.

BENJAMIN M. PRIMER, M.D.,* recently Health Officer of Amarillo, and Potter County, Tex., has been made Assistant to the Director of a recently organized health unit for Austin, and Travis County.

DR. EUGENE BOWIE SHEPHERD, of Baltimore, Md., has been appointed Assistant Health Officer of Pittsylvania County, Va.

DR. CLARENCE H. WHITE, of Burnsville, N. C., District Health Officer for Avery, Watauga, Yancey and Mitchell Counties, has been appointed Health Officer of a new unit in Catawba County.

Western States

DR. JACKSON L. SADLER, of Denver, Colo., Assistant Director of the Maternal and Child Health Division of the Colorado State Board of Health, has resigned to enter private practice in Fort Collins.

---

* Fellow A.P.H.A.
† Member A.P.H.A.

Canada

DR. RANDOLPH J. GIBBONS, formerly Assistant to the Director of the Connaught Laboratories, University of British Columbia, Vancouver, has been appointed Chief Bacteriologist to the Laboratory of Hygiene, Department of Pensions and National Health.

DR. PIO H. LAPORTE, of Edmundston, has been appointed Minister of Health and Labor in the Government of New Brunswick.

DR. JOHN W. MCINTOSH,† Medical Officer of Health of Vancouver, B. C., retired from that position September 30.

Puerto Rico

EDUARDO GARRIDO-MORALES, M.D., DR.P.H.,* of San Juan, has been reappointed Commissioner of Health of Puerto Rico for a term of 4 years.

DEATHS

HENRY MARTYN BRACKEN, M.D., Secretary and Executive Officer of the Minnesota State Board of Health from January 12, 1897, to September 1, 1919, died September 25, 1938, at his home in Claremont, Calif., in his 85th year. Upon retirement as State Health Officer, in 1919, Dr. Bracken was commissioned in the Reserve Corps of the U. S. Public Health Service as Surgeon, with rank equivalent to that of Lieutenant Colonel in the Army, and assigned to the Veterans' Bureau. In 1923 he resigned and moved to California, where he was actively engaged in public health work in Los Angeles City and County.

FRANK W. LAIDLAW, M.D.,* of Middletown, N. Y., District Health Director and Dean of the New York State Department of Health field personnel, died September 20. For over 20 years, Dr. Laidlaw was District Health Officer with jurisdiction over the Middletown district involving general supervision of the work of more than 70 health officers. At the time of his death, he had direct supervision of Sullivan, Orange, and Rockland Counties and of the sub-district composed of Ulster and Greene Counties. Since 1936, when he was promoted to the position of District Health Director, he had had in addition general supervisory jurisdiction over the districts in the eastern upstate area.

ERNEST COLEMAN LEVY, M.D.,* of Richmond, Va., died September 29, at the age of 70. Dr. Levy was formerly Chief Health Officer, and later Director of Public Welfare, of Richmond. For 3 years he was Health Officer of Tampa, Fla. Dr. Levy served as House Physician at Mount Sinai Hospital in New York from 1890 to 1892, and from 1897 to 1900 was a Professor at the Medical College of Virginia. At the same time he was Editor of *The Medical Register*. In 1925 he returned to the Medical College of Virginia to teach preventive medicine. During the World War he made original investigations in the origin of Southern typhoid fever, and was known for his study of the breeding and control of the house-fly, which resulted in the invention in 1911 of the maggot trap. He had also conducted research in infantile diarrhea. He was President of the American Public Health Association in 1923.

RICHARD M. OLIN,* Director of Health Service, Michigan State College, East Lansing, Mich., died October 4. He became a member of the American Public Health Association in 1915, and a Charter Fellow in 1922.

---

* Fellow A.P.H.A.
† Member A.P.H.A.